ROLE OF PROCALCITONIN AND MONOCYTE DISTRIBUTION WIDTH LEVELS AS PREDICTOR OF SEVERITY OF ACUTE PANCREATITIS

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Submitted By

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Dedicated

to

my Family,

&

Teachers

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Dr. Rohan Sharma

LIST OF ABBREVIATIONS

AP	: Acute Pancreatitis
AC	: Atlanta Classification
CRP	: C Reactive Protein
DBC	: Determinant based Classification
ICU	: Intensive Care Unit
MODS	: Multiple Organ Dysfunction Syndrome
MAP	: Mild Acute Pancreatitis
MDW	: Monocyte Distribution Width
M+SAP	: Moderate and Severe Acute Pancreatitis
PCT	: Procalcitonin
RAC	: Revised Atlanta Classification
SIRS	: Systemic Inflammatory Response Syndrome
TLC	: Total Leucocyte Count

ABSTRACT

Introduction- Acute pancreatitis is an inflammatory disease ranging in severity from mild self-limiting to severe life-threatening disease. Diagnosing outcome and severity of acute pancreatitis is a challenging task. Various scores and biomarkers predicting the outcome and severity of acute pancreatitis are available.

Aim of study – To determine the role of biochemical markers like PCT and MDW in predicting severity of acute pancreatitis and those who develop its complications and require any intervention.

Materials and methods – A prospective study was conducted on 120 patients in the department of General surgery and allied specialities ward at DMCH, Ludhiana. Patients with acute pancreatitis meeting the inclusion criteria were included. Blood samples were taken on day 1 and say 5 and values of PCT, MDW along with other parameters were recorded. Patients were divided into two groups of mild & moderate-severe acute pancreatitis. Values of various blood indices along with other important parameters like length of hospital stay, complications, need for ICU/drainage/surgery etc. and outcome were compared between the two groups.

Results- Our study shows a significant role of PCT and MDW levels in early prediction of severity of AP and that of PCT levels in prediction of organ failure in AP.

Conclusion- Various scoring systems have been developed for Acute pancreatitis, but none of them are without flaws. Early diagnosis plays an important role in its management. Haematological markers like PCT & MDW are easily available, simple to interpret and can help in early prediction of severity of Acute pancreatitis and its complications.

Keywords – Acute pancreatitis (AP), Procalcitonin (PCT), Monocyte distribution width (MDW)

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INTRODUCTION

Pancreas is a retroperitoneal organ lying just anterior to first lumbar vertebra. It weighs between 75-125 gm and is anatomically divided into five sections, the head, uncinate, neck, body and tail. The head lies within the C-loop of the duodenum, immediately anterior to the vena-cava at the confluence of renal veins. The uncinate process extends from the head of pancreas behind the SMV (superior mesenteric vein) and terminates adjacent to the SMA (superior mesenteric artery). The neck is the short segment of pancreas that immediately overlies the SMV. The body and tail of pancreas extend across the midline, terminating with the splenic hilum. [1–4]

The pancreas is supplied by a complex arterial network arising from the celiac trunk and SMA. The head and neck are supplied by the pancreaticoduodenal arteries arising from the gastroduodenal and superior mesenteric artery. The neck, body and tail receive arterial supply from the splenic arterial system. The venous drainage mimics the arterial supply, with blood flow from the head of pancreas draining into the anterior and posterior pancreaticoduodenal veins which in turn drain into right gastroepiploic vein and superior mesenteric vein respectively. [5]

The pancreas develops from dorsal and ventral buds which appear from the duodenal endoderm. The initiation of pancreas bud formation and differentiation of the ventral bud is dependent on the expression of PDX1 protein and PTF1. The dorsal bud ultimately develops into superior head, neck, body and tail of mature pancreas. Ventral bud develops as part of hepatic diverticulum and will become the inferior part of the head and uncinate process. Disordered embryogenesis can lead to various congenital conditions like pancreas divisum, a condition resulting from failure of fusion of dorsal and ventral pancreatic ducts. As a result the ventral pancreatic duct and CBD enter the duodenum through a major papilla whereas dorsal enters through a minor papilla. This can lead to partial obstruction caused by a small minor papilla leading to backpressure in the duct. This relative outflow obstruction

has been implicated in the development of relapsing acute or chronic pancreatitis. Another congenital condition that results from aberrant migration of ventral pancreatic bud is Annular pancreas which leads to circumferential or near-circumferential pancreatic tissue surrounding the 2nd portion of duodenum. If symptoms of obstruction occur, then surgical bypass through duodenojejunostomy is performed. [6–10]

The human pancreas is a gland with complex endocrine and exocrine functions. It is mainly composed of acinar cells (85% of gland) and islet cells (2%) embedded in a complex extracellular matrix. The main function of exocrine pancreas is to provide most of the enzymes needed for alimentary digestion. Pancreatic juice is released from both acinar and ductal cells of pancreas. Pancreatic acinar cells synthesize enzymes like trypsin, chymotrypsin, carboxypeptidase and elastase. These are released as inactive proenzymes that are stored as intracellular zymogen granules. Trypsin plays an important role in protein digestion by propagating pancreatic enzyme activation through autoactivation of trypsinogen and other proenzymes, such as chymotrypsinogen, procarboxypeptidase and proelastase. In addition to protease production, acinar cells also produce pancreatic amylase and lipase (also known as glycerol ester hydrolase) as active enzymes. Pancreatic amylase hydrolyzes major polysaccharides into small oligosaccharides, which can be digested by the duodenal and jejunal epithelium. Pancreatic lipase hydrolyses ingested fats into free fatty acids and 2-monoglycerides.[11]

The primary function of pancreatic duct cells is to provide water and electrolytes required to dilute and to deliver the enzymes by acinar cells. Although the concentrations of sodium and potassium are similar to their respective concentrations in plasma, the concentration of bicarbonate and chloride vary significantly according to secretion phase. Once the bicarbonate secreted by pancreatic duct cells reaches the duodenal lumen, it neutralizes the hydrochloric acid secreted by gastric parietal cells. Pancreatic enzymes are inactivated at low pH; therefore, pancreatic bicarbonate provides an optimal pH for pancreatic enzyme function. The pancreatic exocrine secretions occur through

three different phases. The first phase is the cephalic phase, in which the pancreas is stimulated by the vagus nerve in response to the sense, smell, or taste of the food. This phase is generally mediated by the release of acetylcholine at the terminal endings of postganglionic fibers. The main effect of acetylcholine is to induce acinar cell secretion of enzymes. The second phase is the gastric phase mediated by the vagovagal reflexes triggered by gastric distention after ingestion of food. These reflexes induce acinar cell secretion. The most important phase of pancreatic secretion is the intestinal phase, which is mediated by secretin and CCK. Acidification of the duodenal lumen induces the release of secretin by S cells. It is the most important mediator of the secretion of water, bicarbonate and other electrolytes into the duodenum. The presence of lipid, protein and carbohydrates inside the duodenum induces the secretion of CCK-releasing factor and monitor peptide. Both these peptides induce release of CCK by I cells present in the duodenal mucosa. Whereas secretin is the main mediator of the secretion of water and bicarbonate in the intestinal phase, CCK is the main mediator of the secretion of pancreatic enzymes. Release of CCK induces the release of pancreatic enzymes by acinar cells and induces local duodenal vagovagal reflexes that cause the release of acetylcholine, vasoactive intestinal peptide and gastrin-releasing peptide further promoting the release of pancreatic enzymes. CCK also induces the relaxation of the sphincter of Oddi and potentiates the effects of secretin and vice versa. [12–15]

Acute pancreatitis is an inflammatory disease of the exocrine pancreas which ranges in severity from mild self-limiting disease to severe life-threatening disease. It is characterised by pre-mature activation of pancreatic enzymes secreted by pancreas causing autodigestion with local and systemic complications.[16,17]

The incidence of this disease and associated hospitalization rates have shown a persistent rise in last 20 years. It accounts for nearly 275,000 hospital admissions annually out of which approximately 20% of patients develop moderate to severe acute pancreatitis with a mortality

rate of 20-40%. It is commonly defined according to the Revised Atlanta Criteria by presence of at least 2 of the following 3 criteria –

1. Characteristic epigastric pain,
2. Amylase/lipase > 3x upper normal limit,
3. characteristic imaging findings [18]

Patients usually present as acute abdomen in emergency with severe epigastric pain radiating to the back being the most common presenting complaint. It's usually associated with episodes of vomiting.[19] Most patients present within the initial 24 hours of onset of symptoms. The severity spectrum of the disease varies from mild to severe based on local complications and organ failure. Mild disease has no organ failure or local complications, moderate disease is characterised by local complications or transient i.e. less than 48 hours of organ dysfunction and severe disease with persistent (>48 hours) of organ dysfunction. Organ dysfunction is classified according to Modified Marshalls scoring system with a score of more than 2 classifying as organ failure. [20]

Various aetiologies have been identified with the most common being cholelithiasis, alcohol intake, hypertriglyceridemia, hypercalcemia, trauma induced. Drugs notorious for causing pancreatitis include azathioprine, didanosine,6-mercaptopurine, stavudine etc. Lesser prevalent causes include – anatomic causes like pancreatic divisum, annular pancreas, genetic causes like SPINK1, CFTR gene related. Other causes leading to acute pancreatitis include post-procedural like ERCP, SOD type 1, auto-immune, viral and bacterial infections.[21–23]

Two phases of acute pancreatitis have been defined – the early phase (1-2 weeks) and late phase (>2 weeks) which describe the hospital course of this disease. During the early phase, severity of the disease is defined by clinical parameters rather than morphological findings. Severe disease in early phase is characterised by SIRS (Severe inflammatory response syndrome) which predisposes to organ failure (according to Modified Marshalls). The late phase complications mainly encompass local complications like acute necrotic collections, acute fluid collection, pleural effusion, pseudocyst, walled off necrosis. [24–26]

The outcome of the disease primarily depends on the severity of the disease. Therefore, identification of severity and stratification of severity category have gained paramount importance. This way patients can be effectively treated early and the possible need for intensive care can be determined in advance. Various scoring systems have been devised to assess the severity with all of them bearing certain flaws. Most commonly used scores include- bedside BISAP scoring, Modified Glasgow, Ranson score and Balthazar score. Since some of these scores do not provide accurate information at first and some require 48-72 hours, so search for novel biomarkers which can help in early prediction of disease severity has been long on. One such marker has been CRP (Q), which has been used for severity estimation of the disease since years. CRP (Q) > 150 mg/dl usually correlates with severe disease. Two such markers in the study are Procalcitonin (PCT) and Monocyte Distribution Width (MDW). [20,27,28]

PROCALCITONON

PCT is a 116 amino acid peptide precursor of calcitonin synthesized by parafollicular C-cells of thyroid gland. It is released by the neuroendocrine cells of lung and intestine as an acute phase reactant. When released in extra thyroid tissues, it is not cleared into its usual products, thus rise in PCT levels is seen during inflammation with baseline endotoxins, lipopolysaccharides as well as inflammatory cytokines. PCT levels usually don't rise with viral infections as its synthesis is hindered by the presence of interferon gamma.

Recently, it has emerged as a significant biomarker in diagnosing bacterial infections and sepsis. Association of rising PCT with inflammatory cytokine stores forms the basis of its use as a marker for severity of the disease. In systemic infection or inflammatory state, PCT blood levels increase within 3-6 hours and continues till inflammatory process stays. Due to its short half-life (approx. 24 hours), it is emerging as an ideal biomarker to diagnose early sepsis and inflammatory condition and thereby helping in monitoring disease progression. [29–33]

MONOCYTE DISTRIBUTION WIDTH(MDW)

Monocyte distribution width (MDW) is a newer haematological parameter that measures the variability in the size of monocytes, a type of white blood cell involved in the immune response.

The clinical significance of MDW lies in its ability to serve as an early indicator of sepsis and systemic inflammation. An increase in the levels of MDW are associated with severe inflammatory conditions and have been proposed as a marker for severity of acute pancreatitis. The variability in monocyte size reflects changes in immune response and the extent of inflammation, making MDW a potentially valuable parameter in the assessment of disease severity.

A study recently conducted at a single academic centre showed that acute changes in monocyte size, referred to as monocyte distribution width (MDW), best discriminated sepsis (e.g., compared with neutrophil volume changes) from other acute illnesses in the emergency department and further suggested that the combined performance of MDW and white blood count (WBC) for early sepsis detection was superior to either MDW or WBC alone. [34–36]

PCT vs MDW

When comparing the roles of PCT and MDW in determining the severity of acute pancreatitis, both markers offer significant insights into the inflammatory processes and potential complications associated with the disease. PCT primarily serves as a marker for bacterial infections and sepsis, indicating the extent of systemic inflammatory response and infection severity. Conversely, MDW provides a broader indication of systemic inflammation and immune response variability. While PCT is well-established in clinical practice, MDW represents an emerging marker that complements traditional biomarkers, potentially offering a more comprehensive assessment of acute pancreatitis severity.[35]

Need for the Study

The need for this study arises from the critical importance of early and accurate severity assessment in acute pancreatitis, which is essential for optimizing patient management and improving outcomes. Current

markers, while useful, may have limitations in sensitivity and specificity. By investigating the combined roles of PCT and MDW, this study aims to enhance accuracy for the severity of acute pancreatitis, potentially leading to clinical decision-making and patient care.

AIMS AND OBJECTIVES OF THE STUDY

1. Role of Procalcitonin and MDW (Monocyte distribution width) in detection of Severity of Acute Pancreatitis.
2. Early prediction of cases who may develop complications like Pulmonary edema, ARDS, DIC, ARF etc.
3. Identification of those cases who may require intervention of any special kind (eg- necrosectomy, drainage)

REVIEW OF LITERATURE

The first ever description of Acute pancreatitis, now understood as an inflammatory disorder of the pancreas, was published in Basel in 1579 by Iacobo Auberto Vindone after he had performed a post-mortem on an alcoholic patient with a necrotic pancreas. Similar post mortem findings were then reported all over the world in patients who earlier presented with severe abdominal pain, vomiting and then eventually collapsed. Over the years, several scholars including Thomas Cawley (1788), Matthew Baillie (1770s), Bonet (1679), Morgagni (1761) and Antoine Portal (1803) identified various etiologies causing similar clinical spectrum of disease. Later Reginal Huger Fitz published in 1889 when he described fifty three patients, distinguishing between the haemorrhagic, suppurative and gangrenous forms of the disease. [37–39]

Current day understanding of Acute Pancreatitis defines it as an acute inflammatory condition of the pancreas resulting in multisystem involvement with severity varying from mild self-limiting disease needing conservative treatment to severe and complicated disease with high morbidity and mortality.

It is defined according to the revised Atlanta classification which requires that two or more of the following criteria be met for the diagnosis of acute pancreatitis:

(a) abdominal pain suggestive of pancreatitis,

(b) serum amylase or lipase level greater than three times the upper normal value,

(c) characteristic imaging findings [40–42]

Recent studies suggest an annual incidence of 600 to 700 per 100,000 people, with 200,000 to 250,000 discharges occurring yearly for acute pancreatitis. It has increased over the past 2–3 decades, mainly from a rising incidence of gallstone AP and increased testing for pancreatitis. From 1988 to 2018, the standardized incidence rate of acute pancreatitis per 100,000 person-years increased by 29% for men (28.8–37.0%) and by 148% for women (15.7–38.9%). The majority

(around 85%) of patients develop a self-limiting, mild, oedematous-interstitial pancreatitis. However, around 15% of patients will develop severe disease, characterized by SIRS, MODS and local complications.[43]

Various aetiologies have been identified over the years with the most common being gall stones and alcohol (accounting for 30%–50% of cases). The earliest recorded possible link between pancreatic disease and alcoholism was described by Cawley in 1788 when the mention of Drunkard ‘s pancreas came into practice.[44] For more than a century now, alcohol has been well established as an etiology of pancreatitis. The peak incidence age of alcohol-associated acute pancreatitis is between 35 and 44 years in men and between 25 and 34 years in women.

Pancreatitis is a well-known complication of cholelithiasis and choledocholithiasis and not rarely is it the first manifestation of the same. After alcohol and gallstones, hypertriglyceridemia is the third leading cause of acute pancreatitis accounting for upto 5-25% of cases and for upto 50 % cases of acute pancreatitis during pregnancy.

Blunt and penetrating trauma to the abdomen can be associated with AP in 0.2 % and 1 % of the cases respectively. Infrequently anatomical obstruction to the flow of pancreatic secretions can result in AP such as in cases of pancreas divisum, annular pancreas and ascaris lumbricoides. Another frequently encountered cause is post ERCP-most common complication after ERCP seen in 5-15% of patients. Several drugs including thiazides, 6- mercaptopurine, sulphonamides, erythromycin, didanosine, stamivudine, azathiopurine and many others have been notorious for causing pancreatitis. Other less common causes include hypercalcemia (1.5-13% of primary hyperparathyroidism patients develop AP), infections (mumps, coxsackie virus, cytomegalovirus) and Autoimmune (type 1 and type 2). In 1952, Comfort and Steinberg were the first to describe hereditary pancreatitis the aetiology of which remained obscure until modern molecular genetic techniques emerged. Few identified genetic alterations include SPINK-1 , CFTR and PRSS1.[45–47]

In the earliest description of pancreatitis by Fitz, aetiology of the disease was believed to be a complication of gastroduodenitis. [37] However It was proposed in 1896 by Chiari that the underlying mechanism of the disease was pancreatic autodigestion i.e. ' the pancreas succumbs to its own properties'[48] This belief was continued for many years that disease is initiated by activation of trypsinogen into trypsin f/b digestion of pancreatic tissue. Many years later, Steer proposed intracellular activation of trypsinogen as the initiating factor.[49] The exact mechanisms by which these etiological factors induce the activation within acinar cells are still unclear.

Earliest events occur within the acinar cells. Premature activation of these zymogens causes extensive local damage which further deploys release of Damage Associated Molecular Patterns (DAMPs). This is associated with recruitment of neutrophils and inflammatory cascade. Various signalling molecules and pathways which are responsible for the initiation and progression of this cascade have been recently studied. One such novel marker which has been associated with onset of SIRS is nuclear factor kappa B (NFκB). In cases with marked inflammatory reaction, Systemic inflammatory response syndrome (SIRS) sets in, which if excessive further leads to multiple distant organ damage and multiple organ dysfunction syndrome (MODS). MODS associated with acute pancreatitis is the primary cause of morbidity and mortality in the 1st phase of pancreatitis.[50–52]

Two overlapping phases with two peaks of mortality have been identified in acute pancreatitis, with early phase lasting for the first week and not later than two weeks and the late phase beginning at the end of 2nd week. Early phase is characterized by local pancreatic injury causing systemic disturbances and SIRS. Persistent SIRS (>48 hours) has been subsequently found to be strongly associated with risk of development of MODS which is the leading cause of deaths in the early phase.

Late phase is seen only in cases with moderate or severe disease and is characterized by the continuation of systemic signs of inflammation or by the presence of local complications. Critical clinical parameter, as

in first phase, is persistent organ failure and may require support in the form of renal replacement therapy, ventilatory support and nutritional support in the form of nasojejunal or parenteral nutrition. Necrosis is associated with prolonged hospitalization and if infected may require intervention in the form of percutaneous drainage , endoscopic intervention and or surgical intervention.[50, 51, 53]

As clearly understood over the years, the severity of the disease dictates the outcome of the patient. Early prediction of a severe disease helps in aggressive management and early intervention and hence tools to assess the severity of the disease early in it's course have been sought for.

Severity of pancreatitis was earlier classified on basis of the Atlanta classification (AC) which was then revised in 2012 as Revised Atlanta classification (RAC) and is now the most commonly used score to classify severity of pancreatitis. Another classification system in use is the Determinant based classification of 2012 (DBC). A comparison study among AC, RAC and DBC done by Kadiyala et al. showed that RAC and DBC were comparable and both outperformed AC in terms of predicting mortality and ICU admissions[40]

Revised Atlanta Classification-2012

- Mild acute pancreatitis
    - No organ failure
    - No local or systemic complications
- Moderately severe acute pancreatitis
    - Organ failure that resolves within 48 h (transient organ failure) and/or
    - Local or systemic complications without persistent organ failure
- Severe acute pancreatitis
    - Persistent organ failure (>48 h)
        - –Single organ failure

          –Multiple organ failure.

Table 1: Determinant based classification of acute pancreatitis severity

Classification	Mild AP	Moderate AP	Severe AP	Critical AP
(peri) Pancreatic necrosis	No	Sterile	Infected	Infected
Organ failure	No	(and/or) transient	(or) persistent	(and) persistent
Organ failure is defined as score of or equal to 2 according to Modified Marshalls Scoring				

Table 2: Modified marshalls score

System	Score				
	0	**1**	**2**	**3**	**4**
Respiratory (PaO_2/FiO_2)	> 400	301-400	201-300	101-200	≤ 101
Renal (serum creatinine, mg/dL)	≤ 1.4	1.4-1.8	1.9-3.6	3.6-4.9	> 4.9
Cardiovascular (systolic blood pressure mmHg, without inotropic support)	> 90	< 90 Fluid responsive	< 90 Not fluid responsive	< 90 PH < 7.3	< 90 PH < 7.2

(40–42)

Till date various scores including Bedside Index of Severity in Acute Pancreatitis (BISAP), Acute Physiology and Chronic Health Evaluation (APACHE) II and Ransons score have been devised to assess the severity of AP and these have good predictive capabilities for disease severity and mortality. The sensitivity, specificity and positive and

negative predictive values of these scores were compared by Papachristou *et al* and lifen chin et al who reported BISAP score as an accurate means for risk stratification and prognostic prediction in AP patients alongside being a quick and simple marker. Risk prediction was comparable to other traditional markers. [54,55]

BISAP consists of the following parameters:

Blood Urea Nitrogen (BUN) > 25 mg/dl

Impaired mental status (Glasgow Coma Scale Score < 15)

Systemic Inflammatory Response Syndrome (SIRS):

SIRS is defined as presence of two or more of the following

- 1) Temperature of <36 or >38 °C
- 2) Respiratory rate > 20 breaths/min or P a CO2 < 32 mm Hg
- 3) Pulse > 90 beats/min
- 4) WBC <4000 or >12,000 cells/mm 3 or >10% immature bands

Age > 60years

Pleural effusion detected on imaging

BISAP: bedside index of severity in acute pancreatitis, WBC: white blood count.

One point is assigned for each variable within 24 h of presentation and added for a composite score of 0–5.

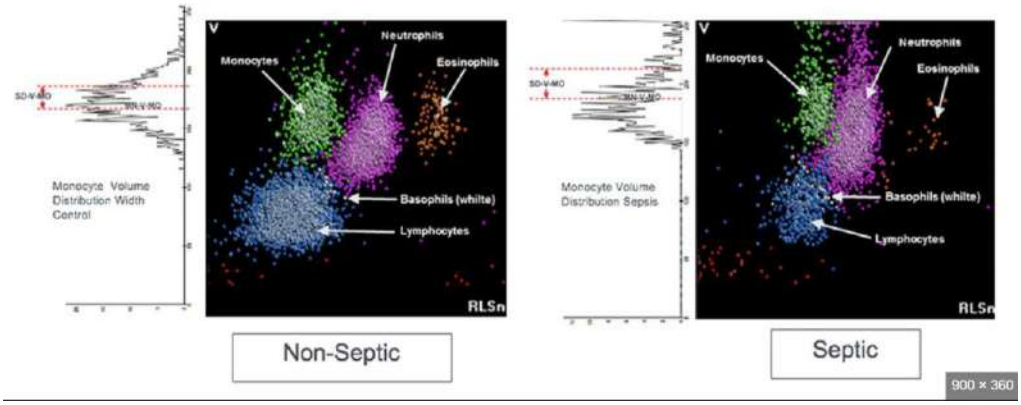
Novel biomarkers including CRP (Q), PCT and MDW have recently been studied as markers for sepsis and severity of pancreatitis.

MDW :

Monocyte Distribution Width (MDW), a novel cytometry-based parameter, is a reflection of the heterogeneity in the size of circulating monocytes .

Monocytes, being the first-line defence against infections, undergo activation after stimulation by infectious stimuli leading to functional and morphological changes. It is well known that these immune cells (neutrophils and monocytes) increase not only in numbers but also in size during the clinical progression from a localized inflammation to

systemic involvement and hence volumetric increases serve as an early manifestation of immune cell response to severe infections and cytokine storms. Hemogram is a routinely sought investigation for most of the patients. In the differential count in CBC, each of the cell types is characterized in their near-native state to generate a 5-part differential that includes both cell number and proportion. An increase in volume can be hence picked up which serves as a surrogate marker of sepsis.[56, 57]



Picture 1. Cell population distribution analysis showing representative histograms of WBC populations from Beckman Coulter DxH 800 analyser in a septic and a non-septic blood sample.[56]

Recent studies have investigated the use of MDW to support a sepsis diagnosis in the ED and reported areas under the receiver operating characteristic curve (ROC AUC) that varied between 0.71 and 0.96.

In combination with other established clinical parameters like TLC, SIRS and qSOFA it has proven to be a useful tool in identification of sepsis. The increasing availability and promising results of MDW as a biomarker in sepsis has prompted an expansion of its use to other infectious diseases. [58, 59]

A systematic review and metaanalysis by Agnello L et al in 2021 showed high accuracy of MDW for detecting patients at risk of sepsis in different clinical wards.[36] The fast, easy and low-cost nature of MDW and the fact that it did not require an additional blood sample made it an attractive marker. High MDW value should serve as a red flag for

sepsis and warrant further investigation to confirm sepsis. A value below the cut off on the other hand should exclude sepsis with high reliability.[35, 58, 60]

Procalcitonin

Procalcitonin was first explained in 1984 by Le Moullec et al. as a 116 amino acid residue whose clinical importance was then demonstrated by Assicot et al. in 1993 when they demonstrated a positive correlation between high serum levels of PCT and patients with positive findings for bacterial infection and sepsis. [61, 62] They further demonstrated that PCT did not elevate in viral infections and that serum levels of PCT would decrease following the administration of appropriate antibiotic therapies.

In healthy individuals procalcitonin is rarely released into the blood, so its concentration in the serum of healthy people is <0.1 ng/mL'.[62] The basis of it serving as a biomarker for sepsis comes from the fact that in diseased states, it is widespread released into the blood from the cells of the thyroid, lung, liver, pancreas, colon, and other organs which leads to a serum rise in levels of pct.

PCT was shown to have a specificity of 79% by Hatzistilianou et al. in determination of sepsis. It has emerged as an effective biomarker for early prediction of sepsis and cytokine storm and has been in clinical use recently. Role of PCT in pancreatitis has been excessively studied and time again has proven beneficial for early prediction of severity the only drawbacks being related to the cost.[63] A metananlysis in 2022 by Lipen Chang et al indicated that the diagnostic value of blood PCT is good in patients with SAP and it is recommended to consider the blood PCT level as an auxiliary marker to scoring systems in the diagnosis of SAP.[64]

Various studies have been conducted from time to time comparing role of different haematological biomarkers in determining the severity of acute pancreatitis. Apart from accurate prediction of severity, these markers should also be helpful in predicting the severity i.e. mild, moderate or severe at an early stage so as to allow adequate

management in patients who are more likely to require ICU care, inotropic support or endoscopic or surgical intervention.

One such study was conducted, predicting the diagnostic accuracy of Monocyte distribution width (MDW) and comparing it to PCT and CRP in adults with sepsis. It was a meta-analysis including eighteen studies. Among the studies included, significant heterogeneity was observed. Eight of these compared the diagnostic accuracies of MDW with PCT and five of them compared MDW and CRP. The result of the meta-analysis suggested that MDW is a reliable biomarker for diagnosing sepsis like PCT and CRP. It however advised further study combining MDW and other biomarkers for increasing the accuracy in sepsis detection. (Huang et all (2022))- [65]

Another hospital based observational study was conducted in one of the tertiary care hospital and medical college in Rajasthan, India. The sample size of the study was 56 cases. Despite a relatively smaller sample size, the study showed promising results in using PCT as an early marker of development of complications in acute pancreatitis[Paliwal et al(2023)]- [66]

In 2022, a single centre prospective cohort study was undertaken comparing MDW and PCT's diagnostic accuracy on sepsis in the emergency department of a high volume centre. After defining proper inclusion and exclusion criteria patients were assigned into different groups i.e. non-infection, infection without SIRS, infection with SIRS and sepsis-3. This study was conducted with a primary outcome of determining the Sensitivity and Specificity of MDW, PCT and MDW+WBC in differentiating septic from non-septic patients. The study was conducted over a period of 17 months enrolling 402 patients. A cut-off value of MDW was set. The study was conclusive that MDW is more sensitive of a biomarker than PCT in predicting infection related SIRS and sepsis-3 in emergency department. MDW value less than the cut-off showed a higher negative predictive value (NPP) to exclude sepsis-3. It also showed that combining MDW and WBC count further improved the accuracy in predicting infections with SIRS.[Li et all(2022)]- [59]

Chen & Jiang did a meta-analysis evaluating the overall diagnostic accuracy of Procalcitonin as a biomarker for severe acute pancreatitis. The analysis included a total of 18 studies meeting the inclusion criteria set for it and contained 1764 patients. The results from this meta-analysis indicated that blood PCT had a good diagnostic value in patients with severe acute pancreatitis. [Chen & Jiang (2022)] – [64]

A study investigating the predictive value of blood markers like PCT,CRP and D-dimer within the 48 hours of admission in patients with moderate and severe pancreatitis was carried out. In this study, the values of PCT,CRP and D-dimer were obtained within 48 hours of admission and was compared with other scoring systems like Modified CT severity index (MCTSI), BISAP, RANSON score, APACHE II score, Modified Marshall score and SIRS score. The result of the study were suggestive that the sensitivity of the parametric model (CRP,PCT,&D-dimer) was higher than that of other scoring systems to which it was compared. The specificity however was higher than some like MCTSI, RANSON score but lower than BISAP, APACHE II, Modified Marshall score and SIRS score. The study concluded that the parametric model which was constructed using PCT,CRP & D-dimer within 48 hours could play a significant role in predicting moderately severe and severe acute pancreatitis.[He et al(2022)]- [67]

An Indian non-randomized observational clinical study was undertaken in Medical college over a period of 1 year evaluating the role of PCT as predictor of severity in acute pancreatitis. It also focussed on correlating the levels of PCT to the CT severity index score. The sample size comprised of 65 subjects. Though the study had its limitations like small sample size, etc but it was able to establish a role of serum PCT in identifying subjects with acute pancreatitis that were more likely to progress to severe acute pancreatitis. This study also indicated that Balthazar score was a better prognostic indicator when compared to other blood parameters in assessing the severity of acute pancreatitis [(Surana et al(2022)] - [68]

Another study was conducted in Turkey which studied the different factors affecting the Procalcitonin levels and its association in

determining the severity of pancreatitis in patients with Acute pancreatitis. The study included 214 patients who were diagnosed with acute pancreatitis according to the Atlanta criteria. The study established that the levels of PCT were higher at time of first admission in patients with severe pancreatitis. Also, PCT levels were much higher in patients with severe pancreatitis with concomitant infection when compared to patients with severe pancreatitis alone. [Ebik et al(2022)]-(69)

Role of haematological markers of systemic inflammation was observed and their association with severity of acute pancreatitis was conducted in one of the tertiary care hospitals. The study design was retrospective and was carried out by reviewing hospital records. Haematological indices such as Haemoglobin, PCV, RBC count, MCV, MCH, MCHC, TLC, NEUTROPHIL to lymphocyte ratio (NLR), Lymphocyte to Monocyte ratio (LMR) and platelet to lymphocyte ratio (PLR) were observed. Patients with CT severity score >=7 were termed as severe pancreatitis. The results of the study were suggestive of a positive correlation between TLC, Neutrophils, NLR & PLR while lymphocyte count and LMR were negatively correlated with severe pancreatitis. [Khan et al(2021)]-(70)

Although, relatively less in number as compared to other biomarkers, still there have been studies conducted evaluating the importance of MDW in defining the prognosis of acute pancreatitis. One such study was conducted by Senlikci et al. The study compared various parameters like age, CRP, NLR etc and MDW among patients which were divided into 2 groups- one as mild pancreatitis and one as non-mild pancreatitis. The results of the study showed that a statistically significant difference was there between the two groups in terms of MDW. Though more extensive studies are required for a clearer evaluation but MDW can be used as a parameter to differentiate mild-pancreatitis from non-mild pancreatitis. [Senlikci et al(2021)]- (71)

Patients with acute pancreatitis specially with severe acute pancreatitis commonly develop ascites along with features of peritonitis. This occurs because of infectious complications likely due to flora

translocation. A study conducted in Ukraine aimed at analysing the prognostic value of PCT in patients with acute pancreatitis complicated by ascites-peritonitis. The study results showed a significant role of PCT in determining such group of patients with acute pancreatitis in which early oral and parenteral antibiotics therapy should be started to reduce the risk of purulent complications. [Kasian et al(2020)] – [72]

Various scoring systems have been developed for assessing the severity of acute pancreatitis. These scoring systems have proven effective in early prediction of severity but they are not without flaws. Some predict severity after 48-72 hours of admission and others require too many parameters. Out of different such available scoring systems, one such system is BISAP scoring system.it has long been used in the severity assessment of acute pancreatitis. To compare the prognostic value of inflammation based prognostic markers with BISAP scoring system, a study was conducted by Lie et al. In this study, various inflammatory markers like NLR,PLR,ACC (albumin corrected calcium), BUN were used. Results showed that NLR & TC(total calcium) are the most powerful markers having same predictive power as BISAP and are equally simple and rapid. [Lin et al(2019)] [73]

In a study conducted in a territory hospital in Shanghai, China Yihui Wang et al used different Leukocyte cell population data as predictive markers for severity of Acute pancreatitis. It was a prospective, observational study. In this a total of 42 cell population data (CPD) were compared, some of which included neutrophils, lymphocytes, monocyte distribution width (MDW), PCT, CRP etc. the results of this study showed that the scoring system formed using these cell population data was comparable in terms of sensitivity and specificity to other commonly used scoring systems like MCTSI, SOFA, APACHE II, BISAP. [Yihui Wang et al(2021)] [74]

MATERIALS AND METHODS

SOURCE OF DATA

A Prospective study was done on patients diagnosed with acute pancreatitis in the department of General Surgery and Allied specialties wards at Dayanand medical college and hospital, Ludhiana.

METHOD OF COLLECTION OF DATA

All patients detected with acute pancreatitis were included in study. Consent was obtained from each patient and relevant detailed history elicited. Findings of general physical and systemic examination were recorded. Before conducting the study, the procedure was explained to the patient in his/her vernacular language to allay the anxiety and fear.

Patients diagnosed as Acute pancreatitis were included irrespective of the etiology. They were classified as Severe, Moderate or Mild according to **Revised Atlanta criteria-**

- Mild attacks – minimal organ dysfunction and recovery without problems.

- Moderately severe – organ failure that resolves within 48 hours or local and systemic complications without persistent organ failure

- Severe attacks – persistent organ failure (> 48 hours)

- Blood samples to be taken **on admission and on day 5**

Inclusion Criterion

All patients diagnosed with Acute pancreatitis

1. typical abdominal pain
2. serum lipase or amylase > 3 times the upper limit of normal
3. characteristic CT findings
4. patients age >18 years

Exclusion Criterion

1. Patients not satisfying inclusion criteria
2. Age <18 years
3. Patients with pancreatic cancer
4. Previous drainage or surgery for necrosis
5. Patients not willing to take part in the study

DURATION OF STUDY/ NUMBER OF CASES: 120

APPROACH TO THE STUDY:

- Patients admitted with AP in accordance with inclusion criteria were identified and were grouped into mild, moderate and severe pancreatitis. Patients who did not satisfy the inclusion criteria were excluded.
- Regular monitoring of patient condition, vitals and complications was done and recorded.
- Investigations including Hemogram with MDW,INR,SGOT,SGPT,CRP,PCT,AMYLASE,LIPASE,SERUM CREATININE,ABG were done along with other routine investigations at day of admission. MDW, CRP AND PCT were repeated on day 5.
- All interventions (if any) in the form of PCD drainage or necrosectomy were recorded.
- General status, severity, outcomes and complications were compared with MDW,PCT and various clinical parameters to establish relationship between the same.
- **OUTCOME:** To group and early identification of patients as having mild, moderate or severe pancreatitis using procalcitonin and mdw levels as predictor

Sample size Calculation

It is assumed that the prevalence rate for acute pancreatitis is 7.9 per 100000 (International journal of advanced medicine. June 2021)

Assumptions:

Confidence level = 95%

Precision (d) = +- 5%

For estimation of sample size, the following formula has been used

n = (Z2 a x p x (1-p)/d2

where

Za= value of standard normal variate corresponding to a level of significance

P = likely value of parameter

Q = 1- P

D = margin of errors which is a measure of precision

With these assumptions the sample size works out to be around 120

STATISTICAL ANALYSIS

Data were described in terms of range; mean ±standard deviation (± SD), frequencies (number of cases) and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the study groups was done using Mann Whitney U test .For comparing categorical data, Chi square ($\chi 2$) test was performed and fisher exact test was used when the expected frequency is less than 5. Receiver operator characteristics (ROC) curve was done, and criterion value was estimated depending on the specificity and sensitivity. Area under curve (AUC) was measured. A probability value (p value) less than 0.05 was considered statistically significant. All statistical calculations were done using (Statistical Package for the Social Science) SPSS 21.0 version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

OBSERVATIONS AND RESULTS

The research was carried out in the Department of General surgery and allied specialities at Dayanand Medical College and hospital. The study involved 120 patients with acute pancreatitis and various parameters were measured on admission and on day 5. The findings of the study were recorded and presented in table form.

TABLE 3. Distribution of patients according to disease severity according to Revised Atlanta Classification

Severity	No. of cases	%age
MILD	65	54.2%
MODERATE	17	14.2%
SEVERE	38	31.7%
Total	120	100.0%

In our study out of 120 patients 65 (54.2 %) cases had mild pancreatitis, 17(14.2%) patients had moderate and 38 patients (31.7%) patients had severe pancreatitis

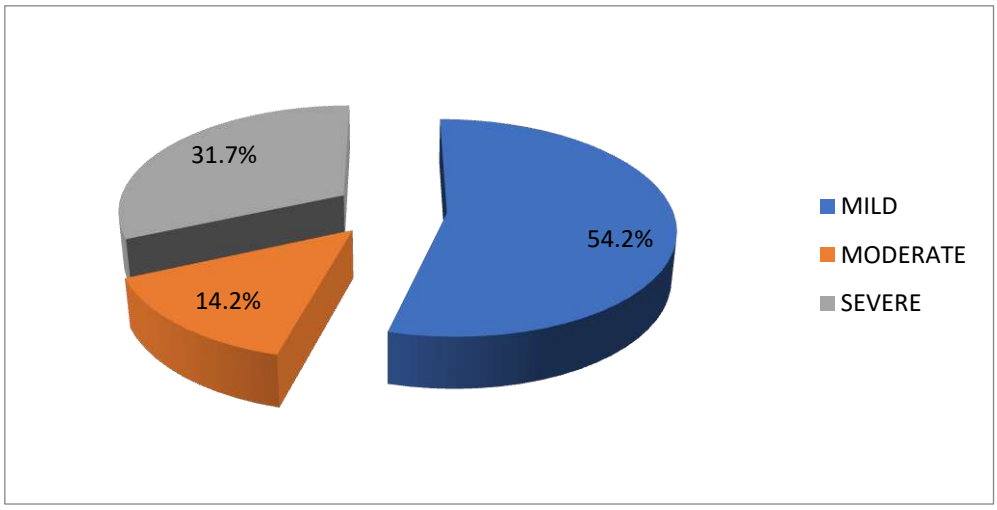


Figure 1. Distribution of patients according to disease severity according to Revised Atlanta Classification

TABLE 4. Age distribution of patients (n=120)

		Mild		Moderate/severe		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
AGE GROUP	< 30	16	24.6%	10	18.2%	26	21.7%	4.502	0.342
	31-40	20	30.8%	11	20.0%	31	25.8%		
	41-50	13	20.0%	18	32.7%	31	25.8%		
	51-60	9	13.8%	7	12.7%	16	13.3%		
	> 60	7	10.8%	9	16.4%	16	13.3%		
Total		65	100.0%	55	100.0%	120	100.0%		

Patients were divided into 5 groups i.e. <30 years, 31-40 years, 41-50years, 51-60 years and >60 years of age. Our study showed that majority of patients of mild acute pancreatitis belonged to age group 31-40 years as compared to moderate – severe pancreatitis group where max patients belonged to 41-50 years age group. The age group < 30 years had 26 cases, with 16 (24.6%) classified as mild and 10 (18.2%) as moderate/severe. The 31-40 age group had the highest number of cases at 31, with 20 (30.8%) mild and 11 (20.0%) moderate/severe. Similarly, the 41-50 age group also had 31 cases, but with a different distribution: 13 (20.0%) mild and 18 (32.7%) moderate/severe. The 51-60 and > 60 age groups each had 16 cases, with 9 (13.8%) and 7 (10.8%) mild, respectively, and 7 (12.7%) and 9 (16.4%) moderate/severe, respectively.

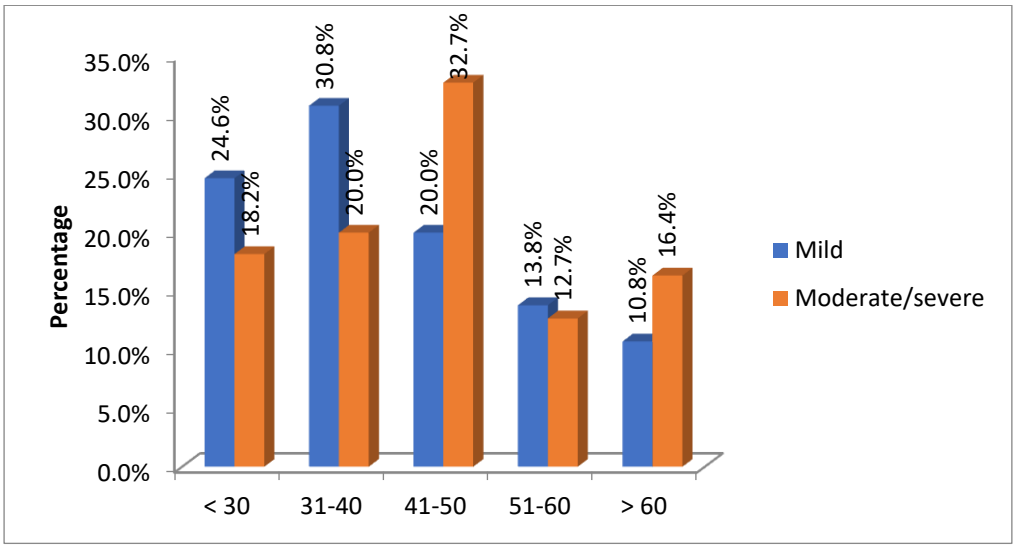


Figure 2. Age distribution of patients

TABLE 5. Gender distribution of patients (n=120)

		Mild		Moderate/severe		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
SEX	FEMALE	17	26.2%	14	25.5%	31	25.8%	0.008	0.931
	MALE	48	73.8%	41	74.5%	89	74.2%		
Total		65	100.0%	55	100.0%	120	100.0%		

Our study population was comprised of 31 (25.8%) females and 89 (74.2%) males. Frequency of both mild and mod-severe AP was found to be higher in males.

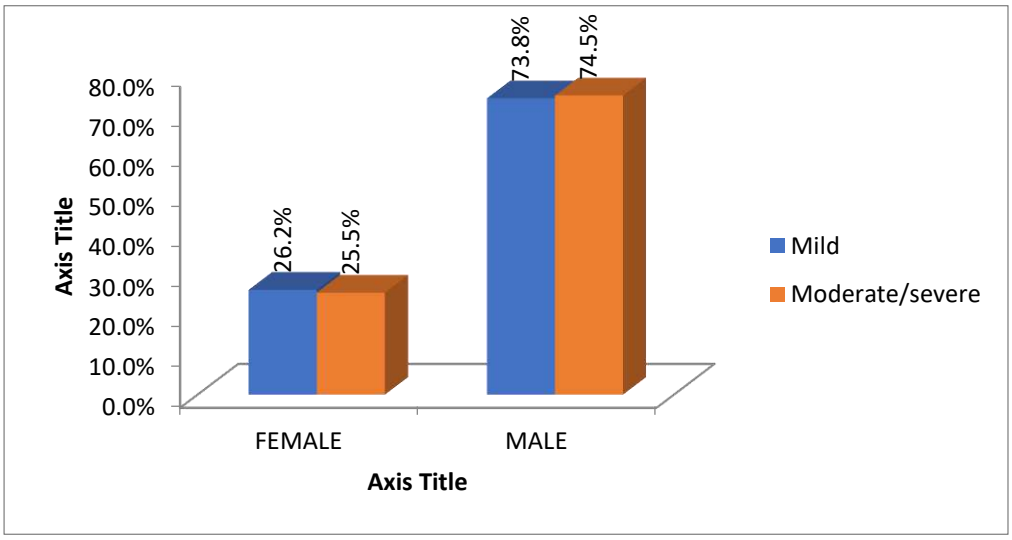


Figure 3 . Gender distribution of patients

TABLE 6. Distribution of patients according to the presenting complaint (n=120)

PRESENTING COMPLAINT		Mild (n=65)		Moderate/severe (n=55)		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
PAIN ABDOMEN	YES	65	100.0%	55	100.0%	120	100.0%		
ABDOMEN DISTENTION	NO	64	98.5%	49	89.1%	113	94.2%	4.762	**0.047**
	YES	1	1.5%	6	10.9%	7	5.8%		
FEVER	NO	63	96.9%	47	85.5%	110	91.7%	5.13	**0.042**
	YES	2	3.1%	8	14.5%	10	8.3%		
VOMITING	NO	45	69.2%	23	41.8%	68	56.7%	9.117	**0.003**
	YES	20	30.8%	32	58.2%	52	43.3%		
CONSTIPATION	NO	60	92.3%	49	89.1%	109	90.8%	0.37	0.543
	YES	5	7.7%	6	10.9%	11	9.2%		
OBSTIPATION	NO	64	98.5%	55	100.0%	119	99.2%	0.853	0.356
	YES	1	1.5%	0	0.0%	1	0.8%		

NAUSEA	NO	49	75.4%	42	76.4%	91	75.8%	0.016	0.901
	YES	16	24.6%	13	23.6%	29	24.2%		
JAUNDICE	NO	63	96.9%	53	96.4%	116	96.7%	0.029	0.865
	YES	2	3.1%	2	3.6%	4	3.3%		
LESS APPETITE	NO	64	98.5%	54	98.2%	118	98.3%	0.014	0.905
	YES	1	1.5%	1	1.8%	2	1.7%		
YELLOWISH DISCOLORATION OF EYES	NO	65	100.0%	52	94.5%	117	97.5%	2.449	0.204
	YES	0	0.0%	2	3.6%	2	1.7%		
SOB	NO	65	100.0%	48	87.3%	113	94.2%	8.785	**0.003**
	YES	0	0.0%	7	12.7%	7	5.8%		
COUGH	NO	65	100.0%	54	98.2%	119	99.2%	1.192	0.275
	YES	0	0.0%	1	1.8%	1	0.8%		

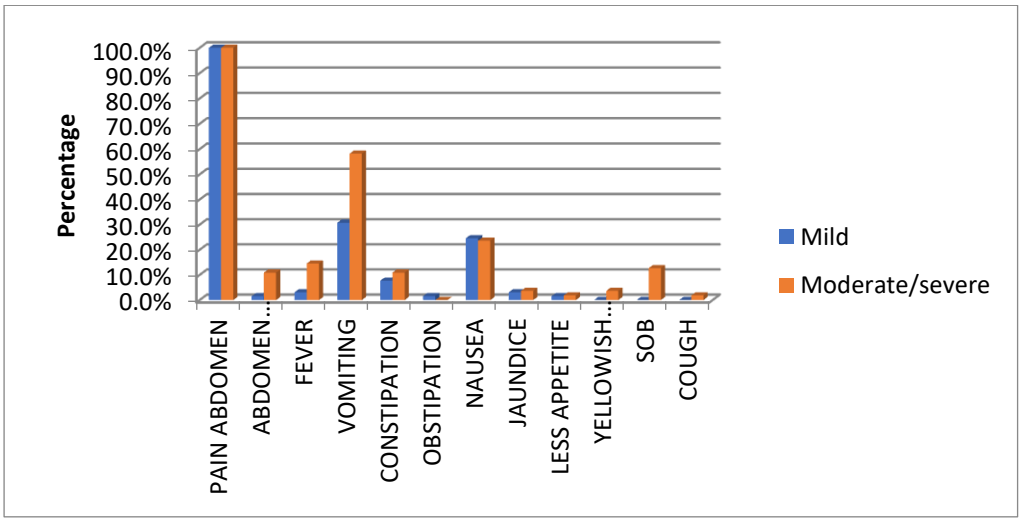


Figure 4. Distribution of patients according to the presenting complaint

100% of patients had a common presenting complaint of pain abdomen. Next most common complaint was vomiting (43.3%) followed by nausea (24.2 %).

Table 7. Duration in days since onset of symptoms (n=120)

		Mild (n=65)		Moderate/severe (n=55)		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
DURATION IN DAYS	< 2	43	66.2%	18	32.7%	61	50.8%	16.822	**0.001**
	3-4.0	10	15.4%	19	34.5%	29	24.2%		
	5-6.0	1	1.5%	7	12.7%	8	6.7%		
	> 6	11	16.9%	11	20.0%	22	18.3%		
Total		65	100.0%	55	100.0%	120	100.0%		

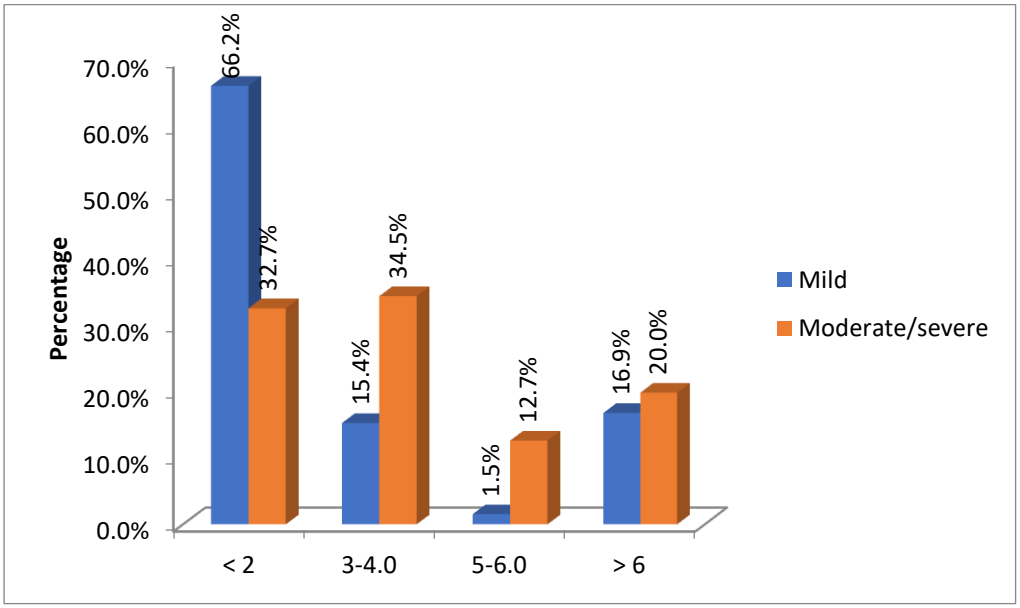


Figure 5 . Duration in days since onset of symptoms

Maximum patients (50.8%) patients presented within 2 days of symptom onset, 24.2 % between 3-4 days , 6.7% at 5^{th}-6^{th} day and 18.3 % patients presented after 6 days from onset of symptoms.

TABLE 8. Distribution of patients according to aetiology (n=120)

ETIOLOGY		Mild (n=65)		Moderate/severe (n=55)		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
GALL STONE INDUCED	NO	40	61.5%	30	54.5%	70	58.3%	0.599	0.463
	YES	25	38.5%	25	45.5%	50	41.7%		
TRIGLYCERIDES	NO	62	95.4%	54	98.2%	116	96.7%	0.723	0.395
	YES	3	4.6%	1	1.8%	4	3.3%		
ALCOHOLIC	NO	38	58.5%	28	50.9%	66	55.0%	0.687	0.463
	YES	27	41.5%	27	49.1%	54	45.0%		
TRAUMATIC	NO	63	96.9%	52	94.5%	115	95.8%	0.422	0.660
	YES	2	3.1%	3	5.5%	5	4.2%		
HYPERCALCEMIA	NO	65	100.0%	54	98.2%	119	99.2%	1.192	0.458
	YES	0	0.0%	1	1.8%	1	0.8%		
ANY OTHER	DRUG INDUCED	2	3.1%	1	1.8%	3	2.5%	1.504	0.681
	IDIOPATHIC	4	6.2%	2	3.6%	6	5.0%		
	NO	58	89.2%	52	94.5%	110	91.7%		
	VIRAL	1	1.5%	0	0.0%	1	0.8%		

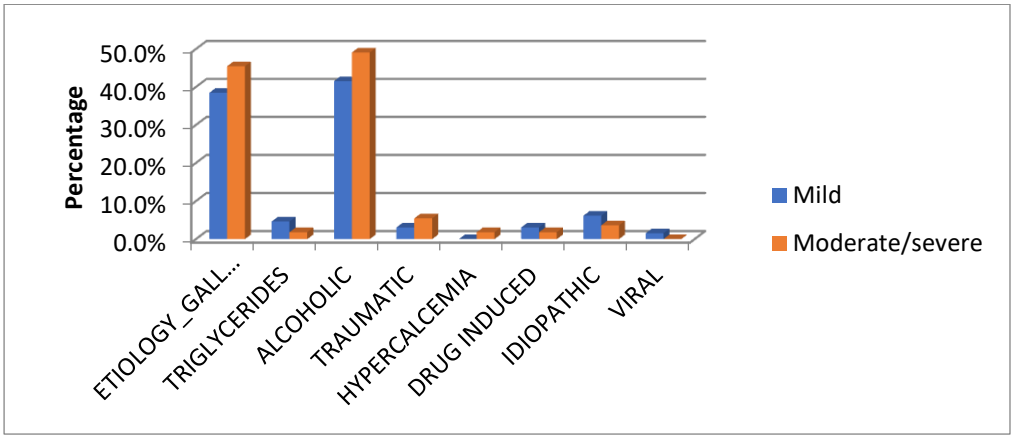


Figure 6. Distribution of patients according to aetiology

Most common aetiologies of AP in our study group were alcohol induced (45%) and gall stone induced (41.7%). Other less commonly encountered aetiologies were idiopathic (5%), trauma induced (4.2%) and drug induced (2.5 %).

TABLE 9. Radiological findings (n=120)

RADIOLOGICAL FINDINGS		Mild (n=65)		Moderate/severe (n=55)		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
evidence of pancreatitis	NO	6	9.2%	2	3.6%	8	6.7%	1.499	0.286
	YES	59	90.8%	53	96.4%	112	93.3%		
peri pancreatic collections	NO	65	100.0%	11	20.0%	76	63.3%	82.105	0.001
	YES	0	0.0%	44	80.0%	44	36.7%		
Necrotic collection	NO	65	100.0%	26	47.3%	91	75.8%	45.195	0.001
	YES	0	0.0%	29	52.7%	29	24.2%		
duct disruption	NO	65	100.0%	52	94.5%	117	97.5%	3.636	0.093
	YES	0	0.0%	3	5.5%	3	2.5%		
cholelithiasis	NO	42	64.6%	36	65.5%	78	65.0%	0.009	0.923
	YES	23	35.4%	19	34.5%	42	35.0%		
congenital anomaly	NO	63	96.9%	55	100.0%	118	98.3%	1.721	0.499
	YES	2	3.1%	0	0.0%	2	1.7%		
fat stranding	NO	19	29.2%	38	69.1%	57	47.5%	18.981	0.001
	YES	46	70.8%	17	30.9%	63	52.5%		

other findings	CHOLEDOCHOLITHIASIS	4	6.2%	1	1.8%	5	4.2%	12.664	0.081
	CIRRHOSIS WITH PHT	0	0.0%	2	3.6%	2	1.7%		
	CLD	0	0.0%	1	1.8%	1	0.8%		
	GROOVE PANCREATITIS	1	1.5%	0	0.0%	1	0.8%		
	NO	59	90.8%	46	83.6%	105	87.5%		
	PESUDOCYST	0	0.0%	2	3.6%	2	1.7%		
	PV & SV THROMBOSIS	0	0.0%	3	5.5%	3	2.5%		
	SPLENIC VEIN THROMBOSIS	1	1.5%	0	0.0%	1	0.8%		
Total		65	100.0%	55	100.0%	120	100.0%		

Imaging evidence of acute pancreatitis was seen in 93.3% patients. Among the radiological findings fat stranding was present in 70.8 % of cases of mild pancreatitis, in patient with moderate to severe acute pancreatitis 80 % had peripancreatic collections and necrosis was found in 52.7 % of patients.

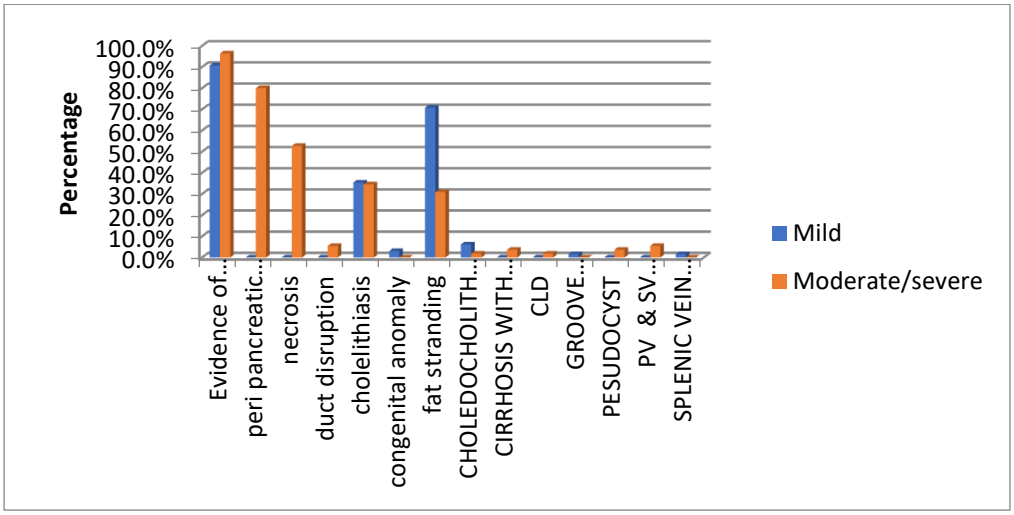


Figure 7 . Radiological findings

TABLE 10. Symptoms during hospital stay (n=120)

SYMPTOMS		Mild (n=65)		Moderate/severe (n=55)		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
ABDOMINAL PAIN	YES	65	100.0%	55	100.0%	120	100.0%		
ABDOMINAL DISTENTION	NO	60	92.3%	37	67.3%	97	80.8%	12.052	**0.001**
	YES	5	7.7%	18	32.7%	23	19.2%		
NAUSEA	NO	39	60.0%	25	45.5%	64	53.3%	2.532	0.112
	YES	26	40.0%	30	54.5%	56	46.7%		
VOMITING	NO	37	56.9%	26	47.3%	63	52.5%	1.113	0.292
	YES	28	43.1%	29	52.7%	57	47.5%		
FEVER	NO	60	92.3%	45	81.8%	105	87.5%	2.997	0.083
	YES	5	7.7%	10	18.2%	15	12.5%		
BREATHLESSNESS	NO	65	100.0%	25	45.5%	90	75.0%	47.273	**0.001**
	YES	0	0.0%	30	54.5%	30	25.0%		
DECREASED URINE OUTPUT	NO	65	100.0%	18	32.7%	83	69.2%	63.22	**0.001**
	YES	0	0.0%	37	67.3%	37	30.8%		
YELLOWISH DISCOLORATION OF URINE	NO	65	100.0%	49	89.1%	114	95.0%	7.464	**0.006**
	YES	0	0.0%	6	10.9%	6	5.0%		
CLAY COLORED STOOLS	NO	65	100.0%	51	92.7%	116	96.7%	4.89	**0.027**
	YES	0	0.0%	4	7.3%	4	3.3%		

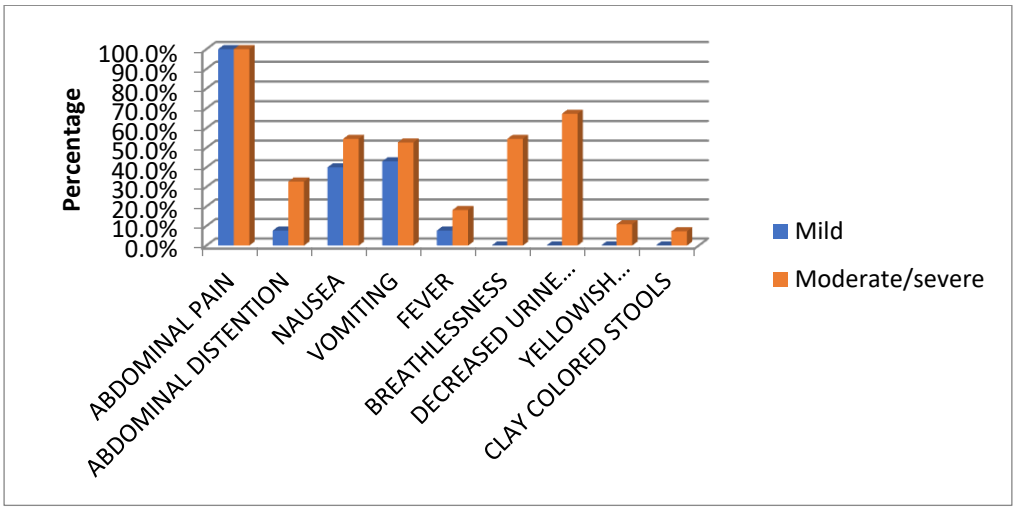


Figure 8 Symptoms during hospital stay

TABLE 11. Signs (n=120)

SIGNS		Mild (n=65)		Moderate/severe (n=55)		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
TENDERNESS	NO	8	12.3%	7	12.7%	15	12.5%	0.005	0.945
	YES	57	87.7%	48	87.3%	105	87.5%		
GUARDING & RIGIDITY	NO	64	98.5%	51	92.7%	115	95.8%	2.453	0.178
	YES	1	1.5%	4	7.3%	5	4.2%		
ASCITES	NO	64	98.5%	48	87.3%	112	93.3%	5.994	**0.023**
	YES	1	1.5%	7	12.7%	8	6.7%		
PLEURAL EFFUSION	NO	65	100.0%	30	54.5%	95	79.2%	37.321	**0.001**
	YES	0	0.0%	25	45.5%	25	20.8%		
PALLOR	NO	63	96.9%	55	100.0%	118	98.3%	1.721	0.499
	YES	2	3.1%	0	0.0%	2	1.7%		
ICTERUS	NO	64	98.5%	48	87.3%	112	93.3%	5.994	**0.023**
	YES	1	1.5%	7	12.7%	8	6.7%		

Tenderness was present in 87.7% of patients which was similar in both groups. In patients with Mild pancreatitis, pallor was seen in 3.1% of the patients. In patients with Moderate-severe acute pancreatitis, pleural effusion was commonly seen in 45.5% of patients followed by ascites and icterus (12.7%) each.

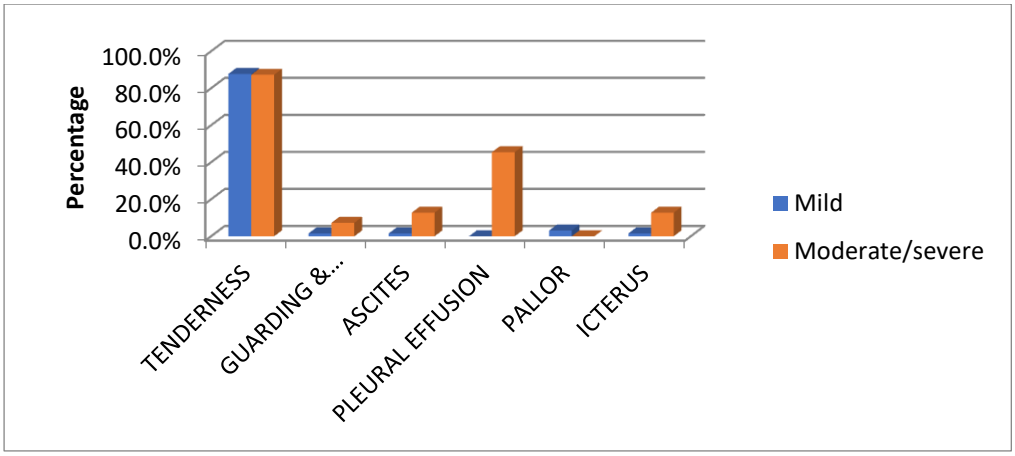


Figure 9. Signs

TABLE 12. Vitals of the patients (n=120)

	Mild (n=65)		Moderate/severe (n=55)		Z	p-value
	Mean	SD	Mean	SD		
SBP	116.00	18.44	118.18	18.06	-0.652	0.516
DBP	72.77	10.83	74.91	11.69	-1.040	0.300
PULSE	86.25	17.86	97.27	20.53	-3.146	0.002
RESPIRATORY RATE	20.49	2.37	21.31	2.32	-1.900	0.060
SPO2	97.65	1.40	97.11	2.27	1.588	0.115

While comparing the vitals on admission among the two groups pf patients, no significant difference was seen in terms of systolic/diastolic b.p., respiratory rate and spO2. However, significant difference was seen while comparing the Pulse/Heart Rate. It was seen that patient with Moderate-severe acute pancreatitis had a higher HR of around 97.27 as compared to those with Mild acute pancreatitis (86.25).

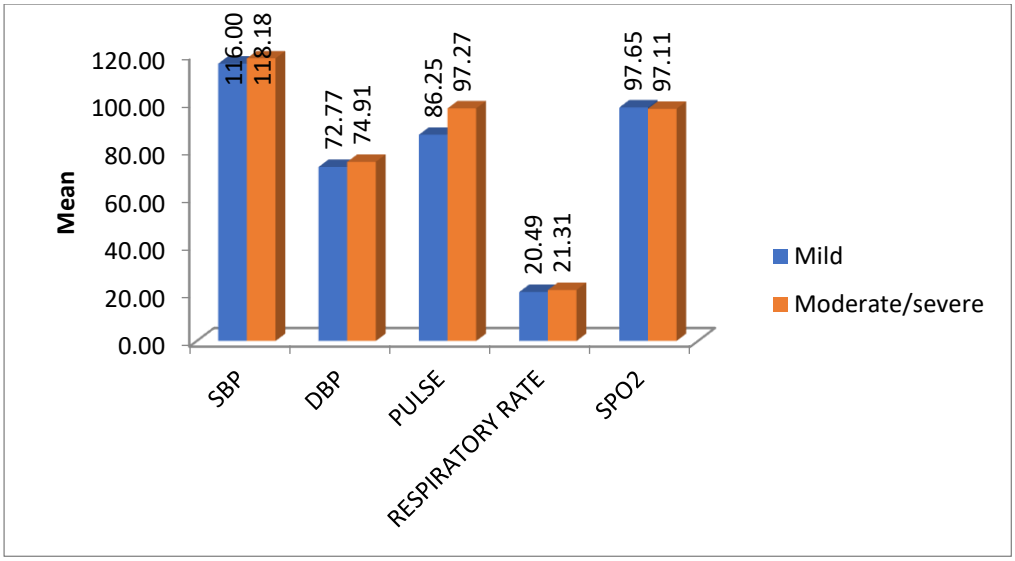


Figure 10. Vitals of the patients

TABLE 13. Relative length of hospital stay (n=120)

		Mild (n=65)		Moderate/severe (n=55)		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
LENGTH OF HOSPITAL STAY IN DAYS	< 7	49	75.4%	9	16.4%	58	48.3%	47.223	**0.001**
	8-14.0	15	23.1%	26	47.3%	41	34.2%		
	> 15	1	1.5%	20	36.4%	21	17.5%		

75.4% of patients with Mild acute pancreatitis were discharged in less than a week and 23.1% had a hospital stay of between 8 to 14 days.

In cases with Moderate-severe acute pancreatitis, only 16.4 % were discharged within 7 days. Majority (47.3%) had a hospital stay ranging between 8 to 14 days and >15 days in 36.4%.

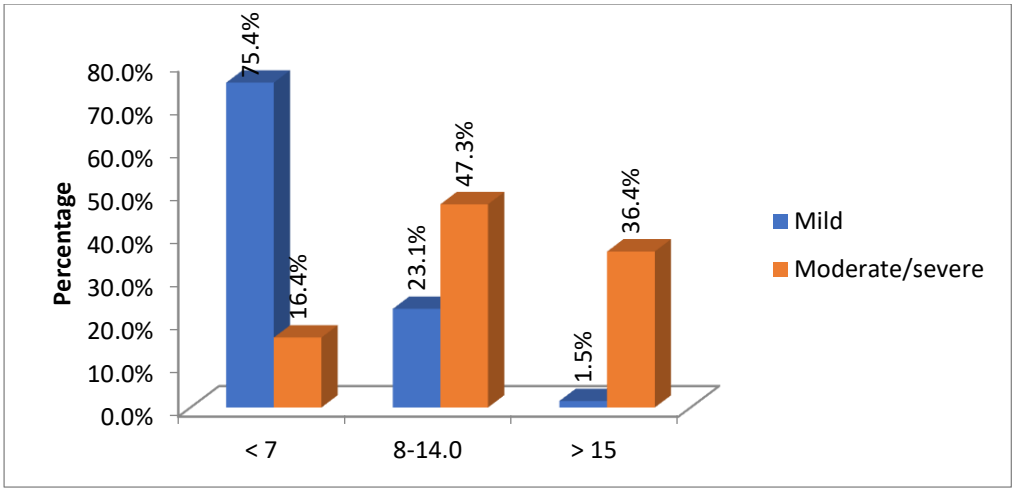


Figure 11. Relative length of hospital stay

TABLE 14. Distribution according to management needed (n=120)

		Mild (n=65)		Moderate/severe (n=55)		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
NEED FOR ICU CARE	NO	65	100.0%	18	32.7%	83	69.2%	63.22	0.001
	YES	0	0.0%	37	67.3%	37	30.8%		
VENTILATORY SUPPORT	NO	65	100.0%	43	78.2%	108	90.0%	15.758	0.001
	YES	0	0.0%	12	21.8%	12	10.0%		
NEED FOR INOTROPES	NO	65	100.0%	33	60.0%	98	81.7%	30.694	0.001
	YES	0	0.0%	21	38.2%	21	17.5%		
NEED FOR SURGICAL INTERVENTION	NO	65	100.0%	43	78.2%	108	90.0%	15.758	0.001
	YES	0	0.0%	12	21.8%	12	10.0%		
NECROSECTOMY	NO	65	100.0%	54	98.2%	119	99.2%	1.192	0.458
	YES	0	0.0%	1	1.8%	1	0.8%		
PERCUTANEOUS CATHETER	NO	65	100.0%	38	69.1%	103	85.8%	23.407	0.001
	YES	0	0.0%	17	30.9%	17	14.2%		
DRAINAGE	NO	65	100.0%	41	74.5%	106	88.3%	18.731	0.001
	YES	0	0.0%	14	25.5%	143	119.2%		
ENDOSCOPIC DRAINAGE	NO	5	7.7%	49	89.1%	114	95.0%	7.464	0.008
	YES	0	0.0%	6	10.9%	6	5.0%		
ORGAN FAILURE OCCURRENCE/MODS	NO	65	100.0%	45	81.8%	110	91.7%	12.893	0.001
	YES	0	0.0%	10	18.2%	10	8.3%		

In patients with Moderate-Severe acute pancreatitis around 67.3% required ICU care. 21.8% were in need of ventilatory support and 38.2% required inotropic support. Around 31% underwent percutaneous catheter drainage. Organ failure occurrence was present in 18.2% of cases with Moderate-Severe acute pancreatitis.

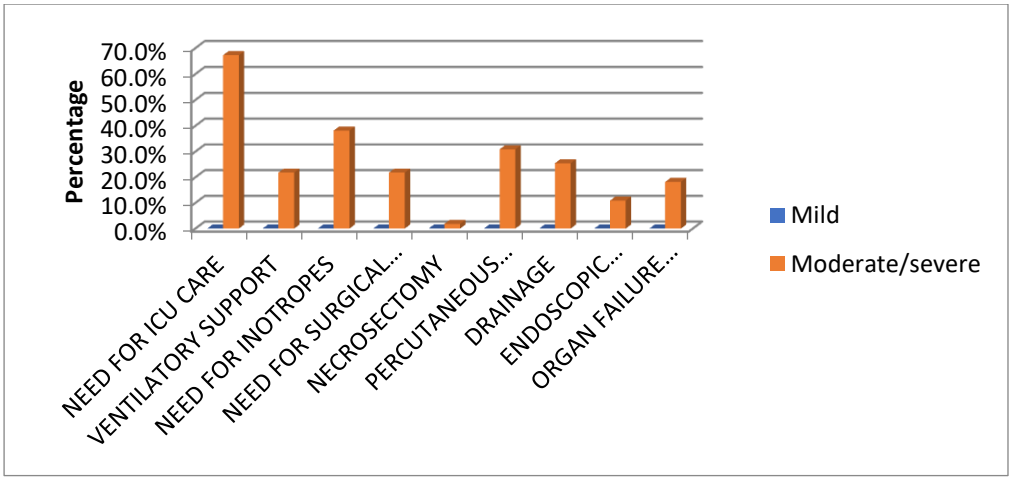


Figure 12. Distribution according to management needed

TABLE 15. Development of complications (n=120)

COMPLICATIONS		Mild (n=65)		Moderate/severe (n=55)		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
ACUTE PANCREATITIS	NONE	64	98.5%	3	5.5%	67	55.8%	104.505	0.001
	YES	1	1.5%	52	94.5%	53	44.2%		
PERIPANCREATIC COLLECTION	NO	65	100.0%	49	89.1%	114	95.0%	7.464	0.006
	YES	0	0.0%	6	10.9%	6	5.0%		
ACUTE NECROTIZING PANCREATITIS	NO	65	100.0%	49	89.1%	14	11.7%	7.464	0.008
	YES	0	0.0%	6	10.9%	6	5.0%		
AKI	NO	65	100.0%	34	61.8%	99	82.5%	30.083	0.001
	YES	0	0.0%	21	38.2%	21	17.5%		
RESPIRATORY FAILURE	NO	65	100.0%	49	89.1%	114	95.0%	7.464	0.008
	YES	0	0.0%	6	10.9%	6	5.0%		
PLEURAL EFFUSION	NO	65	100.0%	42	76.4%	107	89.2%	17.230	0.001
	YES	0	0.0%	13	23.6%	13	10.8%		
SHOCK	NO	65	100.0%	50	90.9%	115	95.8%	6.166	0.018
	YES	0	0.0%	5	9.1%	5	4.2%		

OTHER	DUCT DISRUPTION	0	0.0%	1	1.8%	1	0.8%	21.275	0.016
	GROSS ASCITES	0	0.0%	2	3.6%	2	1.7%		
	HEPATORENAL INVOLEMENT	0	0.0%	5	9.1%	5	4.2%		
	HYPOCALCEMIA	0	0.0%	1	1.8%	1	0.8%		
	HYPOVOLEMIC	0	0.0%	1	1.8%	1	0.8%		
	WALLED OF NECROSIS	0	0.0%	3	5.5%	3	2.5%		
	NO	62	95.4%	40	72.7%	102	85.0%		
	PSEUDOCYST	0	0.0%	2	3.6%	2	1.7%		
	SPLENIC VEIN THROMBOSIS	1	1.5%	2	3.6%	3	2.5%		
Total		65	100.0%	55	100.0%	120	100.0%		

Most commonly found systemic complication in patients with Moderate-Severe were Acute kidney injury seen in 38.2% of patients followed by Pleural effusion (23.6%). Others include Shock seen in 9.1% and Respiratory failure in 10.9% of patients. Among the local complications peripancreatic collections were present in 10.9%, acute necrotizing collections in 10.9%, pseudocyst in 3.6% and walled of necrosis in 5.5%.

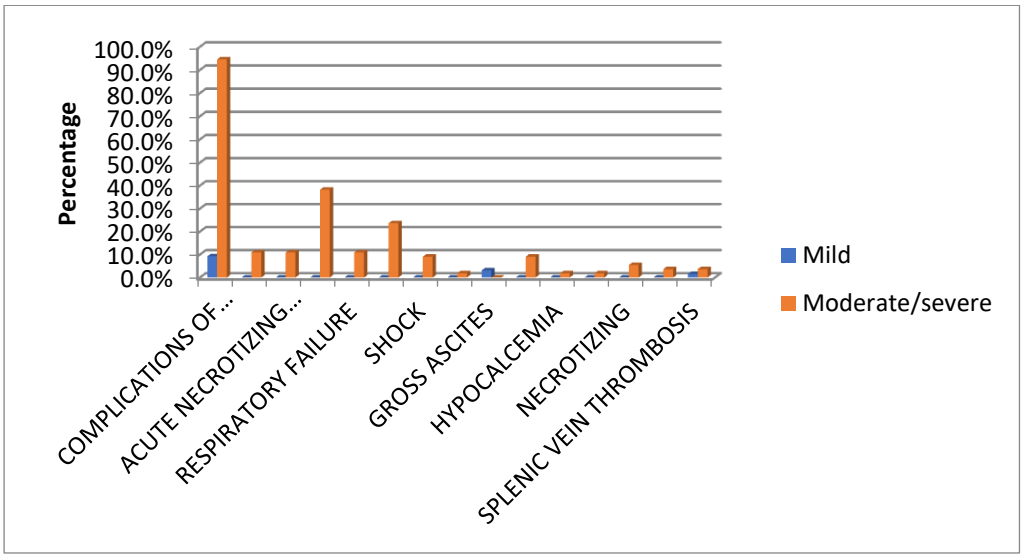


Figure 13. Development of complications

TABLE 16. Distribution according to outcome (n=120)

		Mild (n=65)		Moderate/severe (n=55)		Total		Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age		
DISCHARGED/ DAMA/ DICHARGE ON REQUEST/EXPIRED	DAMA	1	1.5%	10	18.2%	11	9.2%	26.901	**0.001**
	DISCHARGE ON REQUEST	0	0.0%	8	14.5%	8	6.7%		
	DISCHARGED	64	98.5%	34	61.8%	98	81.7%		
	EXPIRED	0	0.0%	3	5.5%	3	2.5%		
Total		65	100.0%	55	100.0%	120	100.0%		

98.5% of patients with Mild acute pancreatitis were discharged in satisfactory condition. among patients with Moderate-severe pancreatitis 61.8% were discharged in stable condition, 14.5% were discharged on request , 18.2% took discharge against medical advise and 5.5% expired.

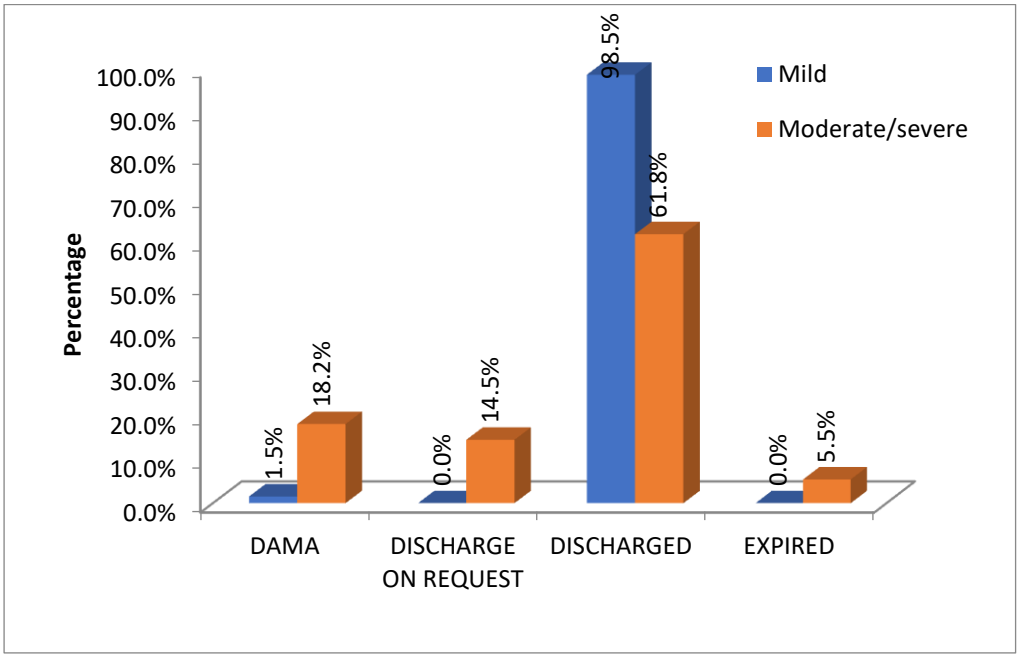


Figure 14 Distribution according to outcome

TABLE 17: Investigations at day 1 (n=120)

DAY 1	Mild (n=65)		Moderate/severe (n=55)		Z	p-value
	Mean	SD	Mean	SD		
AMYLASE	545.94	598.12	1123.35	1562.65	-2.752	0.007
LIPASE	1058.74	1662.40	1481.16	1728.88	-1.362	0.176
PROCALCITONIN	0.60	0.51	2.12	5.93	-2.061	0.041
MONOCYTE DISTRIBUTION WIDTH	26.27	3.31	28.78	6.21	-2.831	0.005
C REACTIVE PROTEIN	111.00	68.67	191.81	115.54	-4.738	0.001
ABG (PH)	7.41	0.07	7.39	0.09	1.550	0.124
LACTATE	1.51	1.11	1.81	1.12	-1.456	0.148
HCO3	23.92	3.34	22.52	3.90	2.123	0.036
CALCIUM	1.00	0.27	0.99	0.25	0.106	0.916
HB	12.11	2.22	12.60	2.24	-1.196	0.234
TLC	12.31	4.67	14.35	6.52	-1.987	0.049

NEUTROPHIL COUNT	76.86	14.66	82.91	9.32	-2.640	0.009
HEMATOCRIT	39.66	10.59	45.38	44.20	-1.011	0.314
INR	1.22	0.16	1.30	0.28	-1.980	0.050
BILIRUBIN (T)	1.35	1.08	2.35	2.23	-3.202	0.002
BILIRUBIN (D)	0.58	0.68	1.30	1.66	-3.193	0.002
SGOT	85.42	100.98	262.65	658.66	-2.142	0.034
SGPT	88.91	124.76	194.49	410.48	-1.970	0.051
ALP	175.54	159.15	161.49	136.37	0.514	0.608
TOTAL PROTEIN	6.50	0.82	6.08	1.09	2.445	0.016
ALBUMIN	3.60	0.69	3.25	0.57	3.033	0.003
Cr	0.76	0.27	1.52	1.40	-4.264	0.000
Urea	32.38	29.72	68.24	91.03	-2.994	0.003

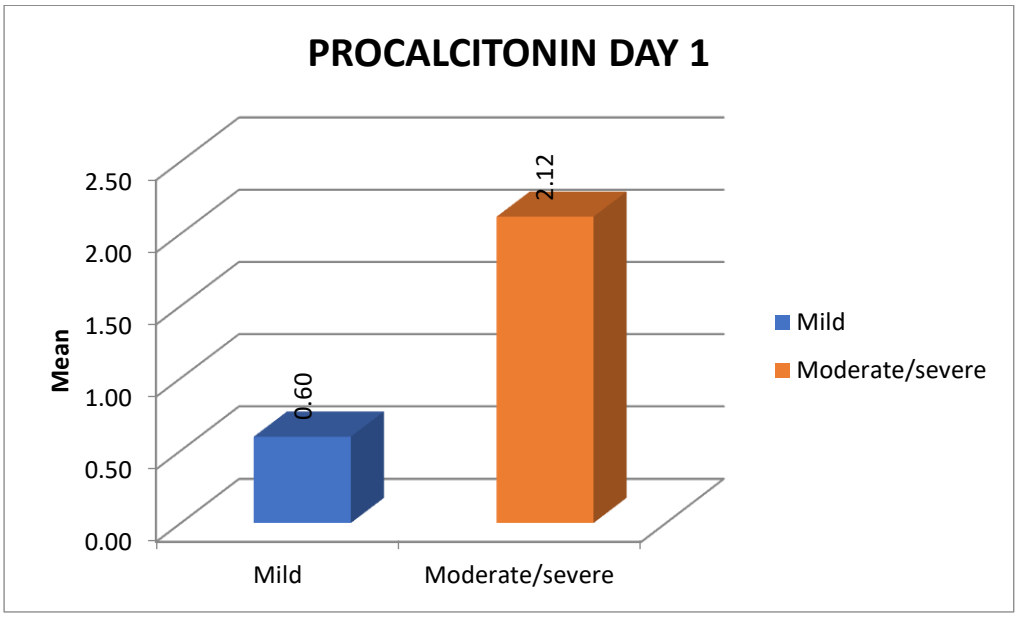


Figure 15: Comparison of PCT values on admission

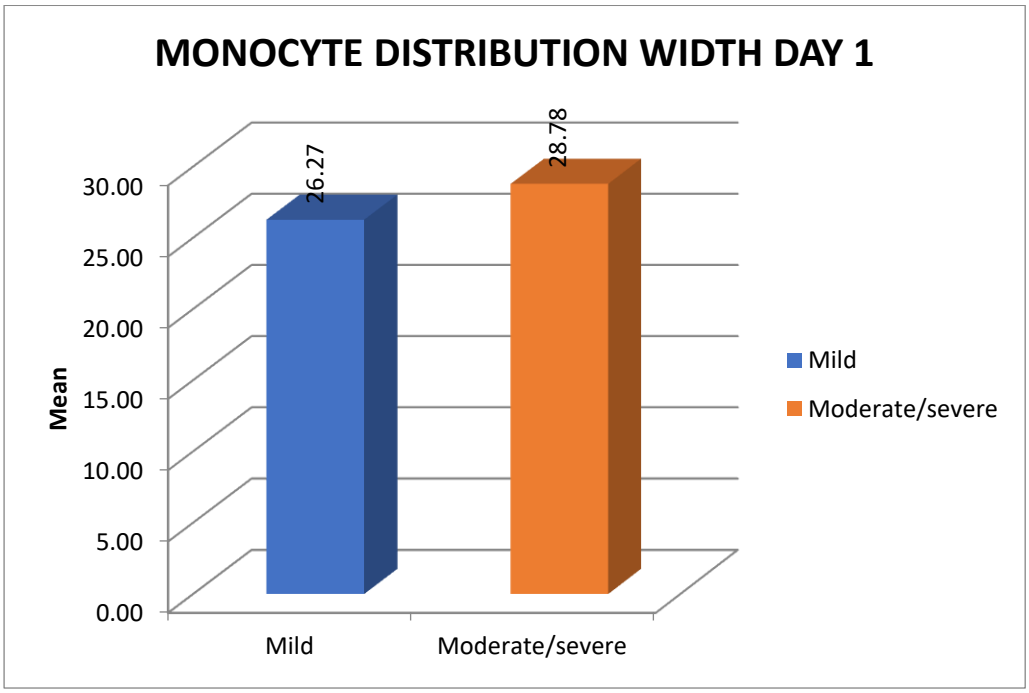


Figure 16. Comparison of MDW levels on admission

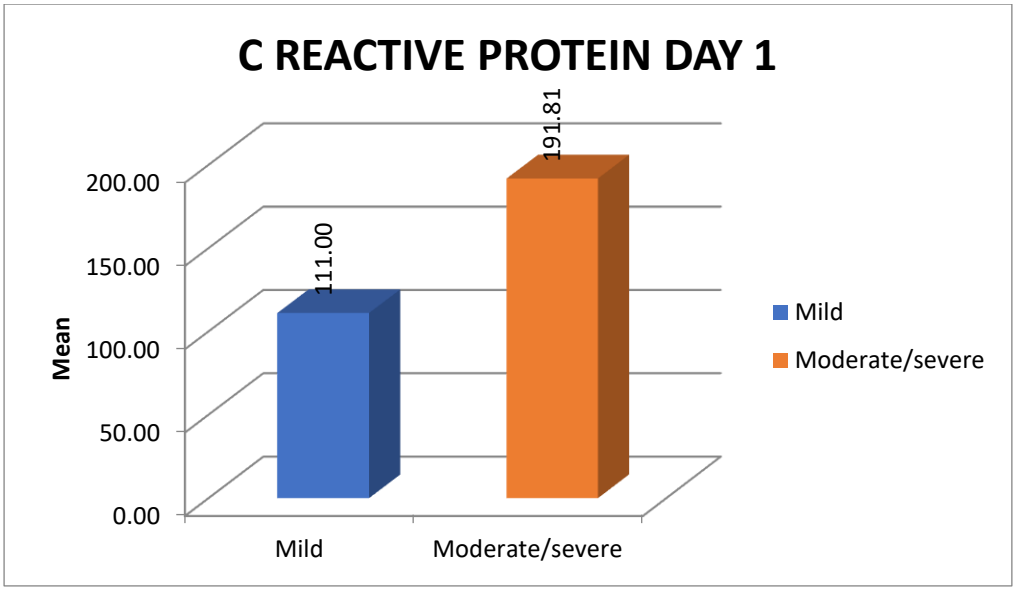


Figure 17. Comparison of CRP levels on admission

Concentrations of inflammatory markers including PCT, MDW and CRP were higher in patients with moderate-severe pancreatitis as compared to mild pancreatitis. Mean PCT values in mild and moderate-severe pancreatitis were 0.60 and 2.12 respectively. Mean MDW values in

mild and moderate-severe pancreatitis were 26.27 and 28.78 respectively. CRP levels showed a mean of 111mg/dl in mild and 191.81 mg/dl in moderate-severe pancreatitis.

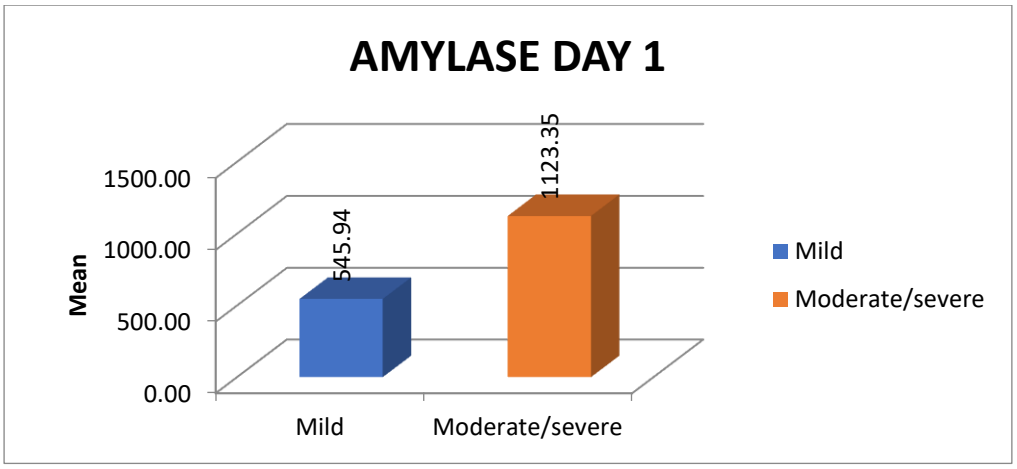


Figure 18. Comparison of amylase levels on admission

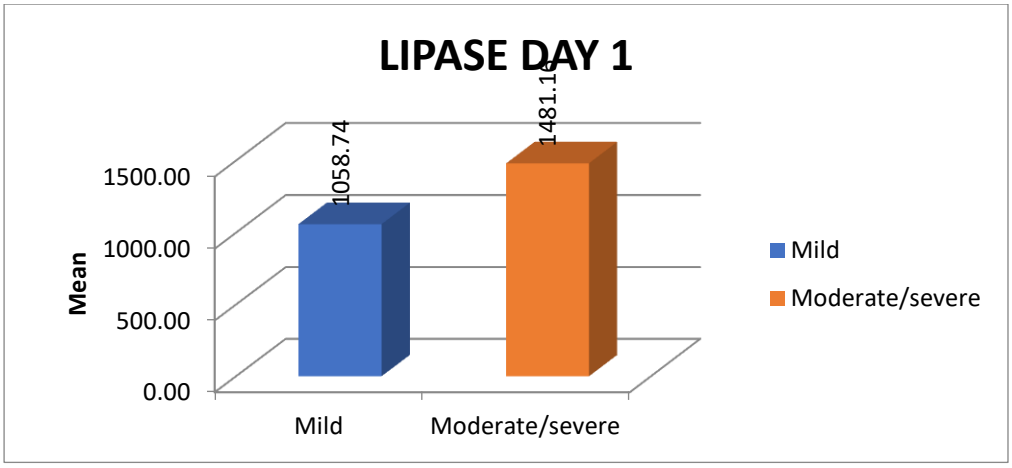


Figure 19. Comparison of lipase levels on admission

Mean amylase levels on presentation were found to be 545.94 in mild acute pancreatitis and 1123 in moderate to severe pancreatitis.

Lipase levels showed similar trend with higher mean levels in the moderate to severe group.

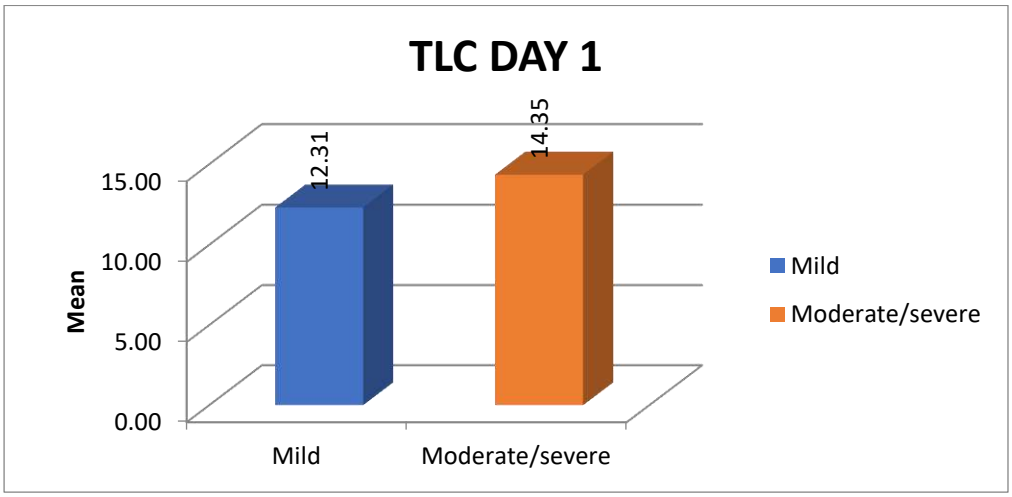


Figure 20. Comparison of TLC on admission

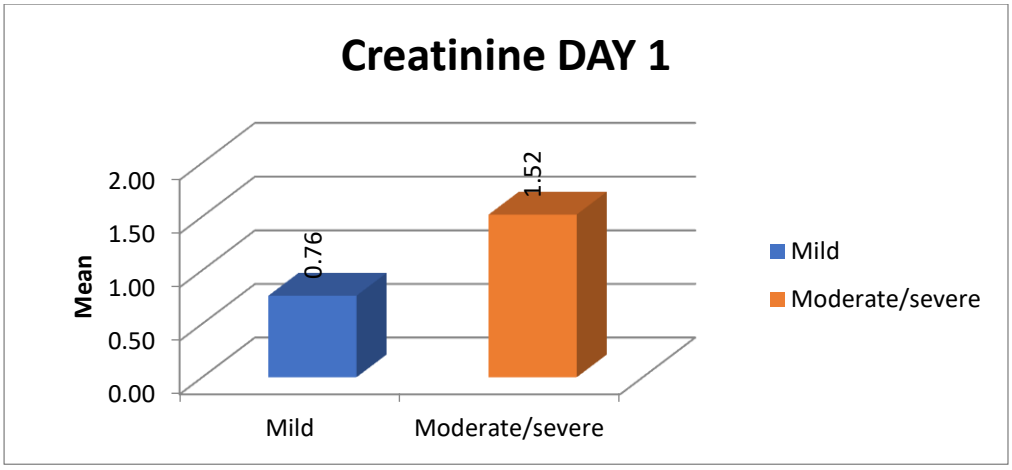


Figure 21. Comparison of serum creatinine levels on admission

Our study showed mean TLC levels of 12.31 in the mild group and 14.35 in the moderate- severe pancreatitis group. Mean creatinine levels were also found to be higher in the moderate-severe pancreatitis patients (1.52 mg/dl) as compared to mild pancreatitis patients (0.76 mg/dl).

TABLE 18 Investigations at day 5 (n=120)

DAY5	Mild		Moderate/severe		Z	p-value
	Mean	SD	Mean	SD		
AMYLASE	239.97	191.92	437.24	679.10	-2.224	0.028
LIPASE	340.88	437.51	540.16	659.48	-1.977	0.050
PROCALCITONIN	0.37	0.44	1.19	3.36	-1.936	0.055
MONOCYTE DISTRIBUTION WIDTH	26.35	2.84	28.29	5.30	-2.549	0.012
C REACTIVE PROTEIN	130.29	76.01	164.70	89.40	-2.279	0.024

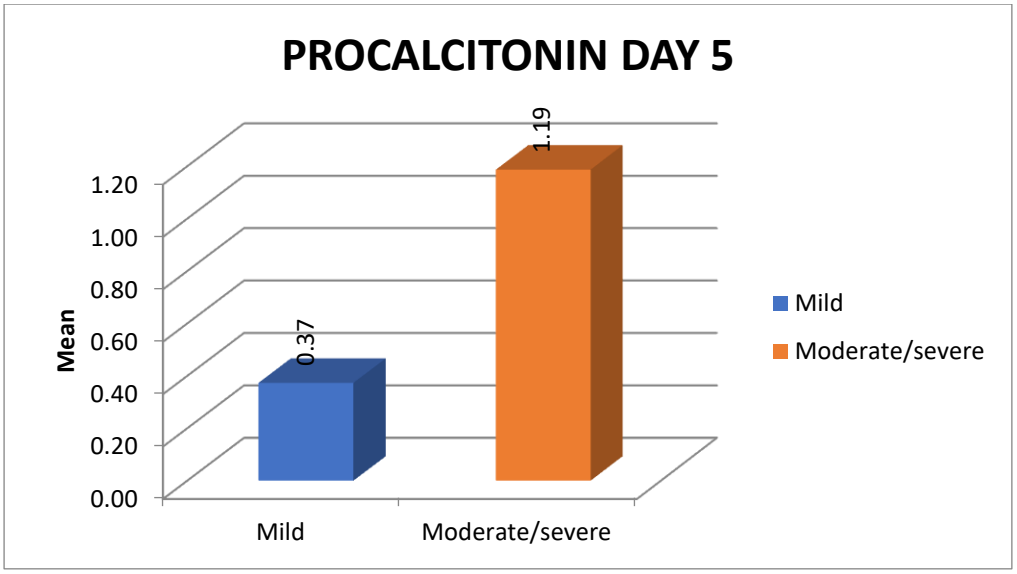


Figure 22. Comparison of PCT levels on day 5

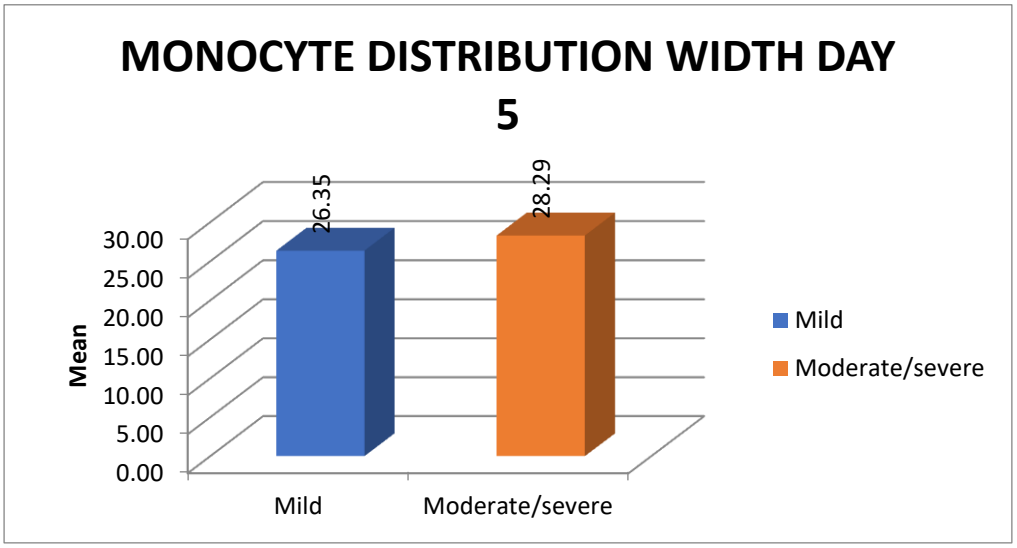


Figure 23. Comparison of MDW levels on day 5

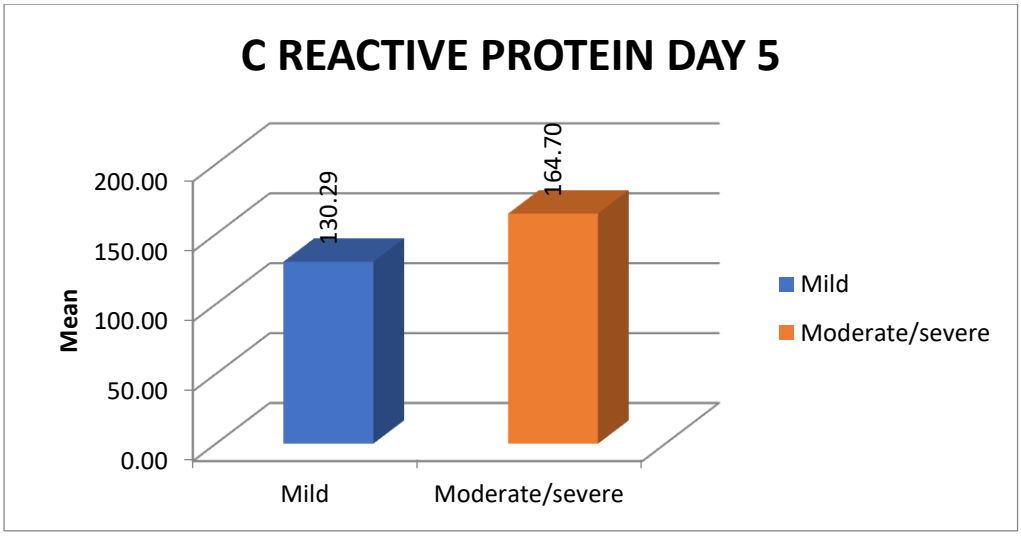


Figure 24. Comparison of CRP levels on day 5

Mean values of PCT, MDW and CRP at day 5 were higher for the moderate to severe pancreatitis group as compared to the mild pancreatitis group patients.

TABLE 19: Mean values of variables (n=120)

	Minimum	Maximum	Mean	SD
AGE	18.00	78.00	43.24	14.47
DURATION IN DAYS	1.00	30.00	4.53	5.32
Day 1				
SBP	60.00	200.00	117.00	18.22
PULSE	20.00	155.00	91.30	19.83
RESPIRATORY RATE	14.00	26.00	20.87	2.37
SPO2	92.00	100.00	97.40	1.86
AMYLASE	9.00	9845.00	810.59	1176.41
LIPASE	14.00	8268.00	1252.35	1699.21
PROCALCITONIN	0.01	40.00	1.29	4.08
MONOCYTE DISTRIBUTION WIDTH	17.99	60.69	27.42	5.00
C REACTIVE PROTEIN	0.57	448.77	174.52	116.78
ABG (PH)	7.10	7.60	7.40	0.08
PCO2	24.00	56.00	37.63	6.92
PO2	16.00	203.00	72.33	34.25
LACT	0.60	6.10	1.65	1.12
HCT	16.00	59.00	39.42	7.73

HCO3	12.10	37.00	23.28	3.66
CA2	0.01	2.10	1.00	0.26
HB	5.90	17.70	12.34	2.24
TLC	0.85	35.70	13.25	5.66
NEUTROPHIL COUNT	31.00	96.00	79.63	12.81
PLATELET COUNT	56.00	633.00	230.69	123.92
HEMATOCRIT	22.40	361.00	42.28	30.90
RDW	6.00	32.20	15.45	2.97
INR	1.00	2.35	1.26	0.22
BILIRUBIN (T)	0.24	10.07	1.80	1.77
BILIRUBIN (D)	0.01	6.91	0.91	1.27
SGOT	14.00	2925.00	166.65	458.49
SGPT	5.00	1731.00	137.30	296.01
ALP	41.00	899.00	169.10	148.70
TOTAL PROTEIN	4.10	9.80	6.31	0.97
ALBUMIN	2.20	5.15	3.44	0.66
Na	13.60	164.00	135.19	16.75
K	2.97	5.25	4.09	0.52
Cl	90.00	133.00	101.50	6.74
Cr	0.36	5.73	1.11	1.04

Urea	5.00	638.00	48.82	67.51
Day 5				
AMYLASE	11.00	4664.00	331.14	490.37
LIPASE	12.00	3268.00	432.22	557.00
PROCALCITONIN	0.01	24.10	0.75	2.32
MONOCYTE DISTRIBUTION WIDTH	19.08	58.80	27.24	4.25
C REACTIVE PROTEIN	1.61	412.00	146.06	83.85
LENGTH OF HOSPITAL STAY IN DAYS	5.00	37.00	9.83	6.24

TABLE 20 (A) Properties of ROC curve in predicting severity of Pancreatitis

Area Under the Curve

Test Result Variable(s)	Area	Std. Error	p-value	Asymptotic 95% Confidence Interval	
				Lower Bound	Upper Bound
PROCALCITONIN	.630	.052	.014	.529	.732
MONOCYTE DISTRIBUTION WIDTH	.621	.051	.023	.520	.722

TABLE 20 (B) Sensitivity, specificity and predictive values in predicting disease severity

PCT

Statistic	Value	95% CI
Sensitivity	70.91%	57.10% to 82.37%
Specificity	55.38%	42.53% to 67.73%
Positive Likelihood Ratio	1.59	1.15 to 2.19
Negative Likelihood Ratio	0.53	0.33 to 0.84
Disease prevalence	45.83%	36.71% to 55.17%
Positive Predictive Value	57.35%	49.42% to 64.92%
Negative Predictive Value	69.23%	58.52% to 78.21%
Accuracy	62.50%	53.20% to 71.17%

MDW

Statistic	Value	95% CI
Sensitivity	27.27%	16.14% to 40.96%
Specificity	96.92%	89.32% to 99.63%
Positive Likelihood Ratio	8.86	2.12 to 37.08
Negative Likelihood Ratio	0.75	0.63 to 0.89
Disease prevalence	45.83%	36.71% to 55.17%
Positive Predictive Value	88.24%	64.19% to 96.91%
Negative Predictive Value	61.17%	57.12% to 65.06%
Accuracy	65.00%	55.76% to 73.48%

PCT+MDW

Statistic	Value	95% CI
Sensitivity	70.91%	57.10% to 82.37%
Specificity	55.38%	42.53% to 67.73%
Positive Likelihood Ratio	1.59	1.15 to 2.19
Negative Likelihood Ratio	0.53	0.33 to 0.84
Disease prevalence	45.83%	36.71% to 55.17%
Positive Predictive Value	57.35%	49.42% to 64.92%
Negative Predictive Value	69.23%	58.52% to 78.21%
Accuracy	62.50%	53.20% to 71.17%

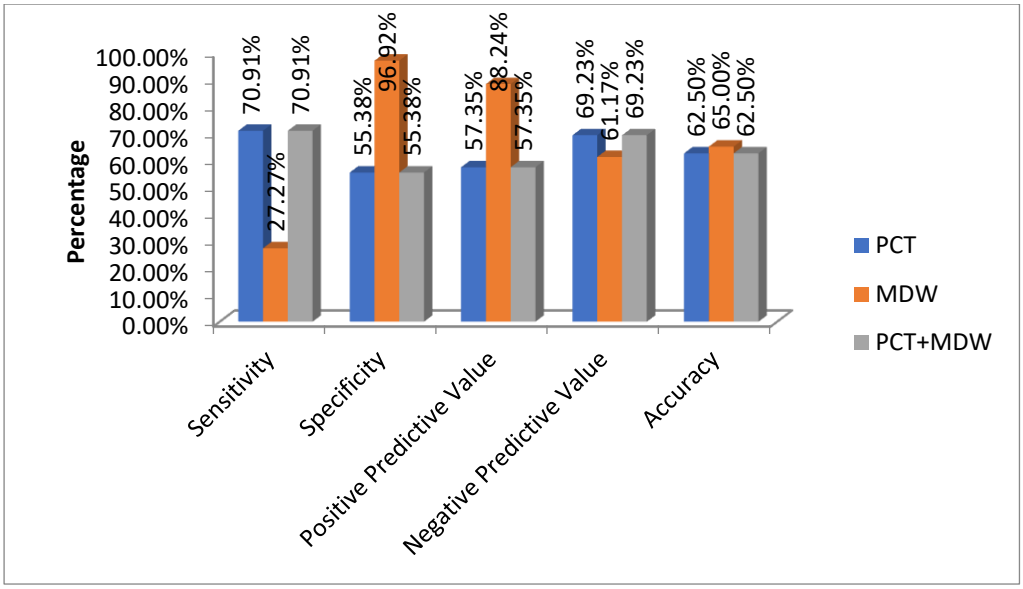


Figure 25. Sensitivity, specificity, positive predictive value, negative predictive value and accuracy of PCT, MDW and combined PCT and MDW in predicting severity of disease

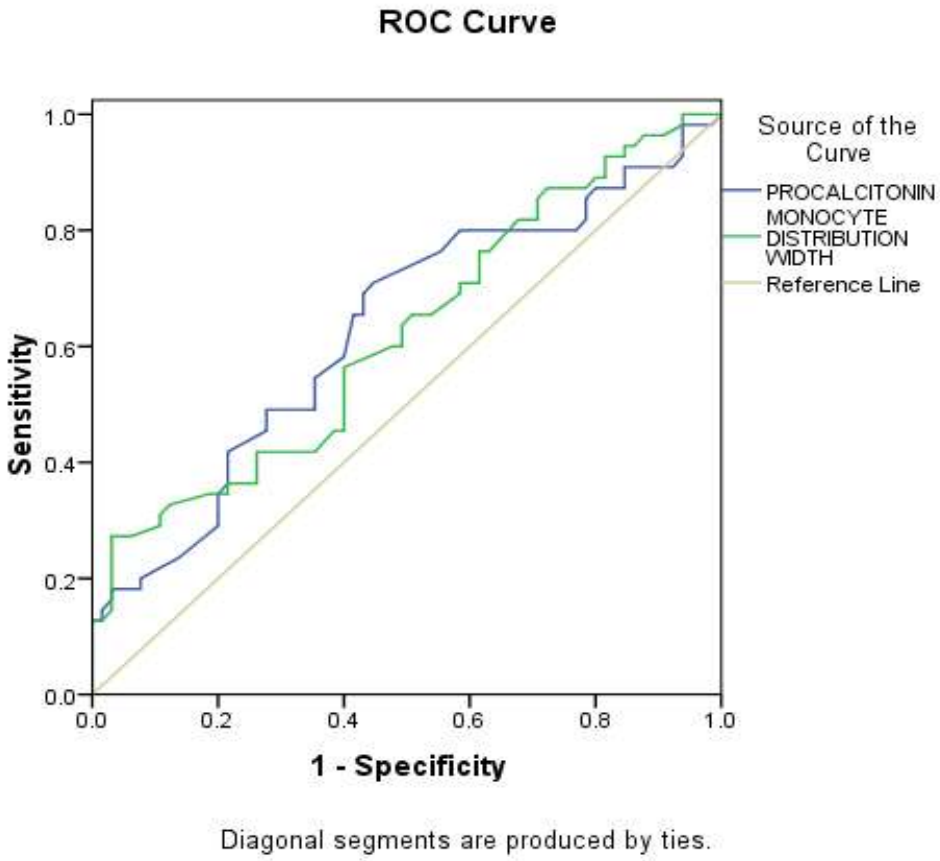


Figure 26. Receiver operator curve for PCT and MDW in predicting severity of disease

TABLE 21(A) Properties of ROC curve in predicting organ failure

Area Under the Curve

Test Result Variable(s)	Area	Std. Error	p-value	Asymptotic 95% Confidence Interval	
				Lower Bound	Upper Bound
PROCALCITONIN	.622	.052	.022	.519	.725
MONOCYTE DISTRIBUTION WIDTH	.602	.053	.056	.499	.705

TABLE 21(B) Sensitivity, specificity and predictive values in predicting organ failure

PCT

Statistic	Value	95% CI
Sensitivity	62.96%	48.74% to 75.71%
Specificity	51.52%	38.88% to 64.01%
Positive Likelihood Ratio	1.3	0.94 to 1.79
Negative Likelihood Ratio	0.72	0.47 to 1.09
Disease prevalence	45.00%	35.91% to 54.35%
Positive Predictive Value	51.52%	43.50% to 59.45%
Negative Predictive Value	62.96%	52.78% to 72.11%
Accuracy	56.67%	47.31% to 65.68%

MDW

Statistic	Value	95% CI
Sensitivity	27.78%	16.46% to 41.64%
Specificity	96.97%	89.48% to 99.63%
Positive Likelihood Ratio	9.17	2.19 to 38.34
Negative Likelihood Ratio	0.74	0.63 to 0.88
Disease prevalence	45.00%	35.91% to 54.35%
Positive Predictive Value	88.24%	64.20% to 96.91%
Negative Predictive Value	62.14%	58.04% to 66.06%
Accuracy	65.83%	56.62% to 74.24%

PCT+MDW

Statistic	Value	95% CI
Sensitivity	68.52%	54.45% to 80.48%
Specificity	57.58%	44.79% to 69.66%
Positive Likelihood Ratio	1.62	1.16 to 2.26
Negative Likelihood Ratio	0.55	0.35 to 0.85
Disease prevalence	45.00%	35.91% to 54.35%
Positive Predictive Value	56.92%	48.61% to 64.86%
Negative Predictive Value	69.09%	58.90% to 77.71%
Accuracy	62.50%	53.20% to 71.17%

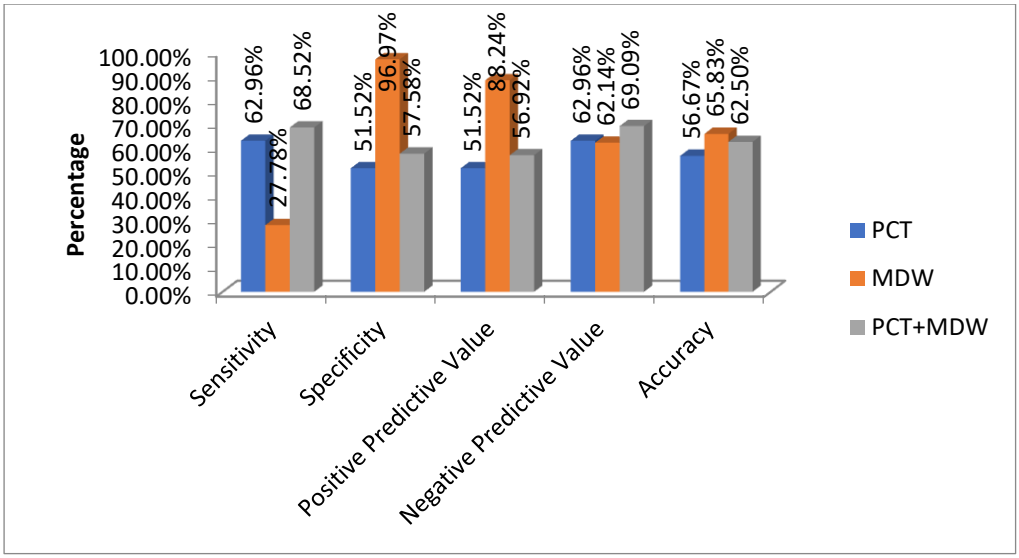


Figure 27. Sensitivity, specificity, positive predictive value, negative predictive value and accuracy of PCT, MDW and combined PCT and MDW in predicting organ failure

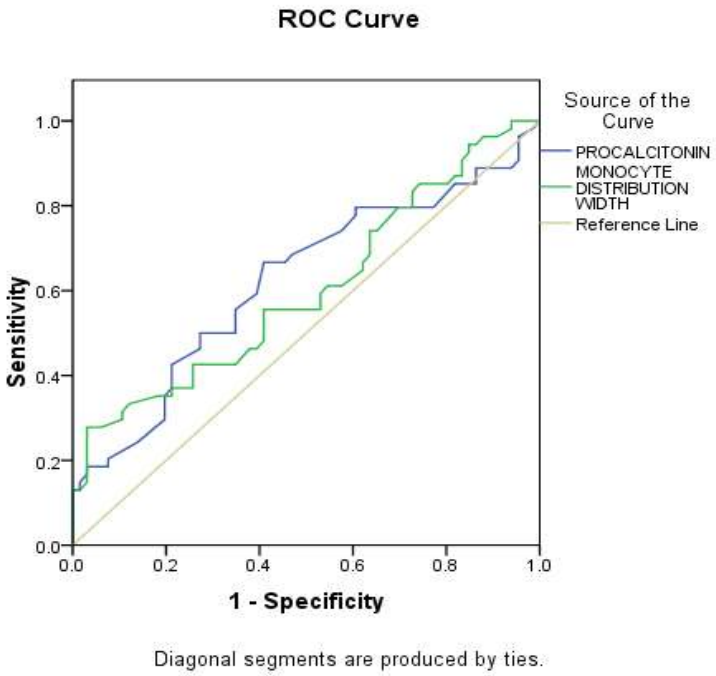


Figure 28. Receiver operator curve for PCT and MDW in predicting organ failure

TABLE 22. Association of various study parameters with PCT cut off level as predicted by the ROC curve (n=120)

		PCT				Total	Chi-square value	p-value
		<0.41		>0.41				
GP	Mild	36	69.2%	29	42.6%	65	8.388	0.005
	Moderate/severe	16	30.8%	39	57.4%	55		
COMPLICATIONS OF ACUTE PANCREATITIS	NONE	36	69.2%	31	45.6%	67	6.679	0.016
	YES	16	30.8%	37	54.4%	53		
PERIPANCREATIC COLLECTION	NO	51	98.1%	63	92.6%	114	1.829	0.232
	YES	1	1.9%	5	7.4%	6		
ACUTE NECROTIZING PANCREATITIS	NO	51	98.1%	63	92.6%	114	1.829	0.232
	YES	1	1.9%	5	7.4%	6		
AKI	NO	48	92.3%	51	75.0%	99	6.114	0.015
	YES	4	7.7%	17	25.0%	21		
RESPIRATORY FAILURE	NO	52	100.0%	62	91.2%	114	4.83	0.036
	YES	0	0.0%	6	8.8%	6		
PLEURAL EFFUSION	NO	46	88.5%	61	89.7%	107	0.047	0.828
	YES	6	11.5%	7	10.3%	13		

SHOCK	NO	52	100.0%	63	92.6%	115	3.99	0.068
	YES	0	0.0%	5	7.4%	5		
OTHER	DUCT DISRUPTION	1	1.9%	0	0.0%	1	**5.478**	**0.706**
	GROSS ASCITES	1	1.9%	1	1.5%	2		
	HEPATORENAL INVOLEMENT	2	3.8%	3	4.4%	5		
	HYPOCALCEMIA	0	0.0%	1	1.5%	1		
	HYPOVOLEMIC	0	0.0%	1	1.5%	1		
	NECROTIZING	0	0.0%	3	4.4%	3		
	NO	46	88.5%	56	82.4%	102		
	PSEUDOCYST	1	1.9%	1	1.5%	2		
	SPLENIC VEIN THROMBOSIS	1	1.9%	2	2.9%	3		
DISCHARGED/DAMA/DICHARGE ON REQUEST/EXPIRED	DAMA	1	1.9%	10	14.7%	11	**10.415**	**0.015**
	DISCHARGE ON REQUEST	2	3.8%	6	8.8%	8		
	DISCHARGED	49	94.2%	49	72.1%	98		
	EXPIRED	0	0.0%	3	4.4%	3		
Total		52	100.0%	68	100.0%	120		

Patients with PCT >0.41 had a higher complication rate in terms of AKI, peripancreatic collections and lesser number of successful discharges.

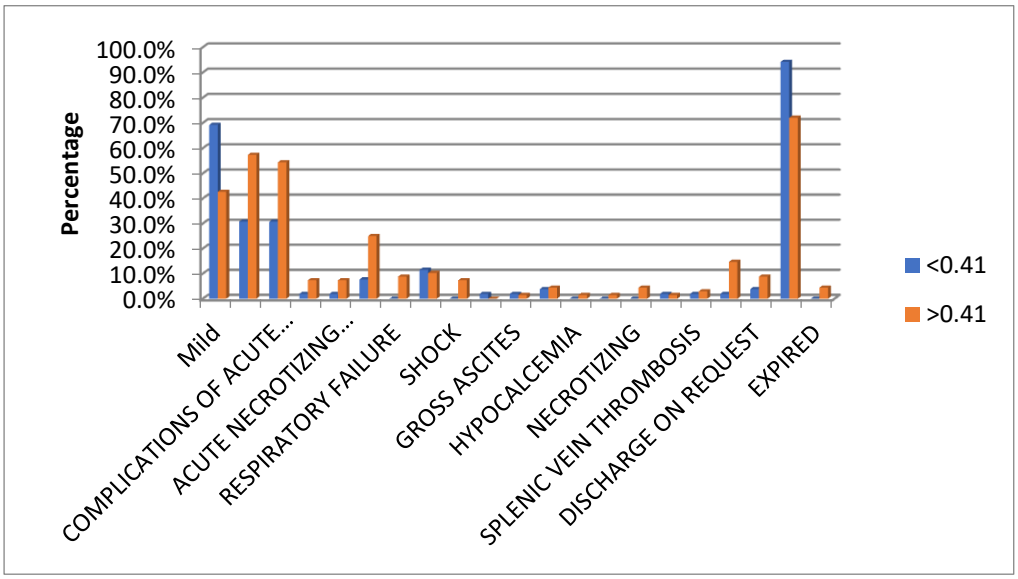


Figure 29. Association of various study parameters with PCT cut off level as predicted by the ROC curve

TABLE 23. Association of various study parameters with MDW cut off level as predicted by the ROC curve (n=120)

		MDW				Total	Chi-square value	p-value
		< 29.33		> 29.33				
GP	Mild	56	56.0%	9	45.0%	65	0.812	0.367
	Moderate/severe	44	44.0%	11	55.0%	55		
COMPLICATIONS OF ACUTE PANCREATITIS	NONE	58	58.0%	9	45.0%	67	1.142	0.285
	YES	42	42.0%	11	55.0%	53		
PERIPANCREATIC COLLECTION	NO	95	95.0%	19	95.0%	114	0.000	1.000
	YES	5	5.0%	1	5.0%	6		
ACUTE NECROTIZING PANCREATITIS	NO	95	95.0%	19	95.0%	114	0.000	1.000
	YES	5	5.0%	1	5.0%	6		
AKI	NO	83	83.0%	16	80.0%	99	0.104	0.751
	YES	17	17.0%	4	20.0%	21		
RESPIRATORY FAILURE	NO	95	95.0%	19	95.0%	114	0.000	1.000
	YES	5	5.0%	1	5.0%	6		
PLEURAL EFFUSION	NO	88	88.0%	19	95.0%	107	0.845	0.693
	YES	12	12.0%	1	5.0%	13		
SHOCK	NO	97	97.0%	18	90.0%	115	2.045	0.193
	YES	3	3.0%	2	10.0%	5		

OTHER	DUCT DISRUPTION	1	1.0%	0	0.0%	1	**14.795**	**0.063**
	GROSS ASCITES	2	2.0%	0	0.0%	2		
	HEPATORENAL INVOLEMENT	2	2.0%	3	15.0%	5		
	HYPOCALCEMIA	1	1.0%	0	0.0%	1		
	HYPOVOLEMIC	0	0.0%	1	5.0%	1		
	NECROTIZING	2	2.0%	1	5.0%	3		
	NO	89	89.0%	13	65.0%	102		
	PSEUDOCYST	2	2.0%	0	0.0%	2		
	SPLENIC VEIN THROMBOSIS	2	2.0%	1	5.0%	3		
DISCHARGED/DAMA/DICHARGE ON REQUEST/EXPIRED	DAMA	8	8.0%	3	15.0%	11	**7.507**	**0.057**
	DISCHARGE ON REQUEST	6	6.0%	2	10.0%	8		
	DISCHARGED	85	85.0%	13	65.0%	98		
	EXPIRED	1	1.0%	2	10.0%	3		
Total		100	100.0%	20	100.0%	120		

Value of MDW > 29.33 was associated with higher complication rate in terms of peripancreatic collections, acute kidney injury, respiratory distress, shock, hepatorenal involvement, necrotizing pancreatitis with lesser number of successful discharges and a higher demise rate.

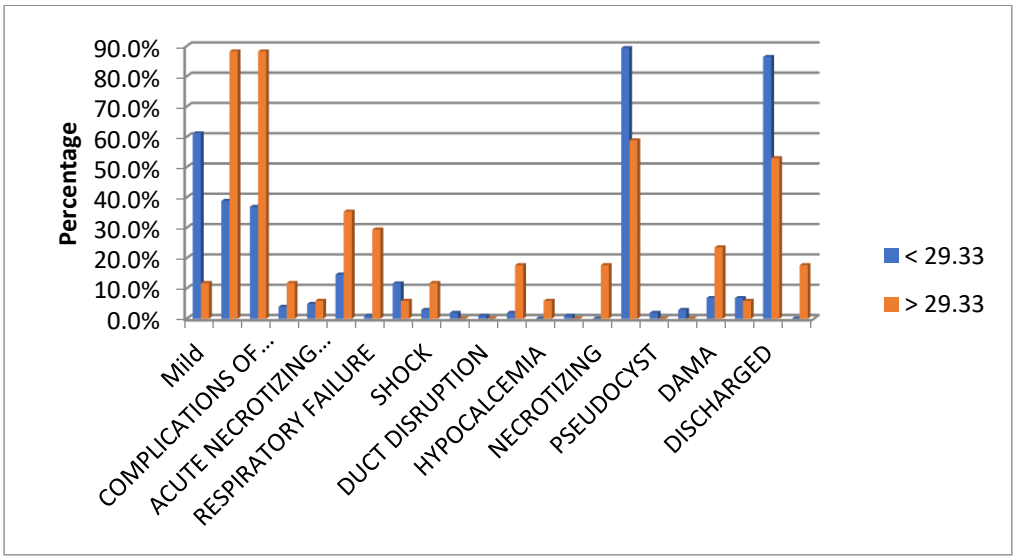


Figure 30. Association of various study parameters with MDW cut off level as predicted by the ROC curve

DISCUSSION

Early prognostic prediction in AP continues to be a challenge for physicians and surgeons all over the world. Precise and rapid determination of disease course in the early stage of AP is the long sought after goal so as to allow appropriate therapeutic intervention in time. In an attempt to assess the early predictive value of various parameters, a study was conducted in Department of Surgery and allied specialities at Dayanand Medical College and Hospital, Ludhiana which included 120 patients who were admitted to DMC&H with acute pancreatitis.

A total of 120 patients were enrolled out of which 65 were categorised as cases of Mild acute pancreatitis and 17 were moderate and 38 were severe. Moderate and severe were together categorized as Moderate + Severe acute pancreatitis henceforth mentioned as M+SAP. Mild acute pancreatitis has been henceforth mentioned as MAP. Majority of the cases were mild. Moderate and severe cases were comparatively less frequent however still comprised a significant portion of cases. This distribution highlights that while over half of the cases are mild, a considerable number still fall into the severe category, underscoring the importance of addressing both ends of the severity spectrum effectively.

The mean age of presentation was 41.75 years in patients with MAP and 45 years in patients with M+SAP. Our study showed younger age predominance in comparison to other studies done by Yihui Wang et al , Senlikci et al and Wang et al. Mean ages reported by Yihui Wang et al were 53 years in mild and 45 to 48 years in Moderate + Severe acute pancreatitis; by Senlikci et al were 57 and 58 years for mild and moderate to severe groups respectively.[23,71,74]

The Chi-square value was calculated to be 4.502 with a p-value of 0.342. This indicates that there is no statistically significant difference in the distribution of case severity across the different age groups, suggesting that age may not be a major determinant of the severity of cases in this study.

Our study population was comprised of 31 (25.8%) females and 89 (74.2%) males in total. Frequency of both mild and mod- severe AP was found to be higher in males with 73.8% MAP patients and 74.5% M+SAP patients being males. Similar gender predilection was reported in studies by Mukherjee et al and Wang et al. This was however in contrast to study by Senlikci et al where 60% were females. The Chi-square value for this comparison was calculated to be 0.008, with a p-value of 0.931. This indicates no statistically significant difference in the severity of cases between males and females, suggesting that sex does not play a significant role in determining case severity in this study [71,75]

In our study, 100% of patients had a common presenting complaint of pain abdomen. Next most common complaint was vomiting (43.3%) followed by nausea (24.2 %). Similar trends in presenting complaints were reported by other studies including Wang et al and Selinkci et al.

These findings indicate that while abdominal pain was a universal complaint, other symptoms like vomiting, fever, and SOB were more common in moderate/severe cases, suggesting a potential correlation between these symptoms and the severity of the condition[71]

In our study more than 50% of patients presented within 48 hours of symptom onset and around 18% presented after 6 days. Out of the patients who presented early, majority were those with MAP (66.2%) as compared to 32.7% of those with M+SAP. This difference was statistically significant and one reason to which it could be attributed is that ours being a tertiary care centre, some of these patients were referred or took discharge from other hospitals. Some of them didn't get a consultation done until the symptoms worsened. Irrespective of the day at presentation, in our study the day of admission was taken as day 1.

Diverse aetiologies of acute pancreatitis were seen among the subjects with alcohol induced (45%) and gall stone induced pancreatitis (41.7%) being the most common causes. Other less common causes included 4.2% cases secondary to trauma, 3.3% attributable to

hypertriglyceridemia, 0.8% to hypercalcemia, 2.5 % cases drug induced and 5 % cases were found to be idiopathic. The Chi-square value for the distribution of etiologies was 1.504 with a p-value of 0.681, indicating no statistically significant difference between the etiologies of mild and moderate/severe cases. This suggests that the underlying cause of the condition does not significantly impact the severity in this study.

These findings were comparable to the results seen in a study done by Surana et al in which biliary and alcoholic were the two most common cause of acute pancreatitis.[68]

While monitoring vitals at time of admission patients in the M+SAP group demonstrated a higher heart rate of around 97.27/min as compared to patients with MAP having an average heart rate of 86.25/min. Similar results were observed in the study by Yi hui Wang in which heart rate of patients with Moderate acute pancreatitis was around 106 per minute and patients with severe acute pancreatitis had heart rate of 125 per minute. Patients with Mild acute pancreatitis had a heart rate of around 94.5 per minute. [74]

The study analyzed the radiological findings of 120 patients to understand their correlation with the severity of the condition. Evidence of pancreatitis was present in 112 cases (93.3%), with 90.8% of mild cases and 96.4% of moderate/severe cases showing this finding. Peri-pancreatic collections were exclusively observed in moderate/severe cases, affecting 44 patients (80.0%). Similarly, necrosis was only found in moderate/severe cases, with 29 cases (52.7%).Duct disruption was rare, seen in just 3 moderate/severe cases (5.5%). Cholelithiasis was evenly distributed across both groups, present in 42 cases (35.0%). Congenital anomalies were noted in 2 mild cases (3.1%). Fat stranding was more common in mild cases (70.8%) compared to moderate/severe cases (30.9%). Cholangiography findings of choledocholithiasis were present in 5 cases (4.2%), more in mild cases (6.2%) than moderate/severe cases (1.8%). Cirrhosis with portal hypertension was noted in 2 moderate/severe cases (3.6%). Chronic liver disease (CLD) and groove pancreatitis were each found in 1 case

(0.8%). Pseudocysts were observed in 2 moderate/severe cases (3.6%). Portal vein and splenic vein thrombosis were also rare, each seen in a few moderate/severe cases.

The Chi-square value for these radiological findings was 12.664 with a p-value of 0.081, suggesting that while certain findings like peri-pancreatic collections and necrosis are associated with moderate/severe cases, overall, there is no statistically significant difference between the radiological findings of mild and moderate/severe cases. This indicates that while some radiological signs are more common in severe cases, the presence of these signs alone may not be sufficient to determine the severity of the condition conclusively.

The study examined clinical signs among 120 patients to evaluate their correlation with the severity of the condition. Tenderness was the most common sign, observed in 105 patients (87.5%), with similar rates in both mild (87.7%) and M+SAP cases (87.3%). Guarding and rigidity were relatively rare, noted in 5 cases (4.2%), more frequently in M+SAP cases (7.3%) than in mild cases (1.5%).Ascites was observed in 8 patients (6.7%), predominantly in M+SAP cases (12.7%) compared to mild cases (1.5%). Pleural effusion was present in 25 cases (20.8%), exclusively in the M+SAP group (45.5%). Pallor was seen in 2 mild cases (1.7%), while Icterus affected 8 patients (6.7%), mainly in M+SAP cases (12.7%).These findings indicate that signs such as pleural effusion, ascites, and icterus are more associated with M+SAP cases, suggesting they may be important indicators of increased severity in patients with similar clinical presentations.

Among systemic complications, acute kidney injury was the most commonly encountered, seen in 38.2% of patients with M+SAP followed by respiratory complications in the form of pleural effusion and shortness of breath, seen in 23.6%; and shock in 9.2 % patients with M+SAP. Study by Qi Yang He et al reported acute renal failure in 16% and respiratory complications in 8% of patients. [67]

The mean length of hospital stay in patients with MAP was 6.42 days with a SD of 2.01. It was significantly lower than that observed in patients with M+SAP with a mean hospital stay of 13.85 days with a SD of 7.1. These results were comparable to the study by Qi Yong He et al in which length of stay was 8 days in patients with Mild acute pancreatitis and 12 days in Moderate + severe acute pancreatitis. In another study by Surana et al the average hospital stay in patients with Mild acute pancreatitis was 11.3 +/- 2.4 days and 18.3 +/- 2.6 days in patients with Severe pancreatitis. The Chi-square value for the distribution of hospital stay lengths was 47.223 with a p-value of 0.001, indicating a statistically significant difference between the lengths of hospital stay for Mild and M+SAP cases. This suggests that the severity of the condition is strongly associated with longer hospital stays, with M+SAP cases requiring significantly more extended care (65,68)

The study examined the need for intensive care and various medical interventions among 120 patients, categorizing them into mild and M+SAP cases based on their conditions. None of the mild cases required ICU care, ventilatory support, inotropes, surgical intervention, necrosectomy, percutaneous catheter drainage, endoscopic drainage, or experienced organ failure/MODS. In contrast, significant proportions of M+SAP cases required these interventions: 67.3% needed ICU care, 21.8% required ventilatory support, 38.2% needed inotropes, 21.8% required surgical intervention, 1.8% underwent necrosectomy, 30.9% underwent percutaneous catheter drainage, 10.9% underwent endoscopic drainage, and 18.2% experienced organ failure/MODS.

Comparing these to a study done by Yi hui Wang et al is was observed that in their study 71% patients with Moderate and 100% with Severe acute pancreatitis required ICU admissions. Percutaneous drainage was done in 16% with Moderate and 58% with Severe acute pancreatitis. Surgical intervention was required in 25% of cases as compared to 21.8 % in our study.(67)

98.5% of patients with MAP were discharged in stable condition and 1.5% took DAMA whereas among patients with M+SAP 61.8% were discharged in stable condition, 14.5% were discharged on request, 18.2% took discharge against medical advice and 5.5% expired. When comparing these outcomes to other studies the mortality was 16% in the study by Yi hui Wang and 3.35% in the study by Passi et al.

Various lab parameters were studied in all patients admitted with acute pancreatitis at day 1 of admission and day 5 of admission.

The concentrations of inflammatory markers procalcitonin, CRP and MDW were studied at day 1 and day 5 of admission. Procalcitonin at admission showed significantly higher blood concentrations in M+SAP (2.12) as compared to MAP (0.60). Similar results were observed in a study by Wang et al where concentration of serum procalcitonin in Severe acute pancreatitis (2.66ng/ml) was significantly higher than in mild acute pancreatitis (0.26 ng/ml).

We observed a mean MDW value of 28.78 in M+SAP which was higher as compared to that observed in patients with MAP (26.27). Similar trends were observed by Wang et al with mean value of 21.94 in MAP and 26.91 in severe acute pancreatitis.[74]

Higher CRP levels were observed in our study in M+SAP (191.8 mg/dl) as compared to MAP (111mg/dl). This finding was consistent with that seen by Wang et al with CRP levels of 231mg/dl in severe pancreatitis and 123 mg/dl in mild pancreatitis and by Qi Yong He et al. with mean value of 51mg/dl in mild acute pancreatitis and 90 mg/dl in moderate+ severe pancreatitis group.[67,74]

The AUC for PCT and MDW at day 1 for predicting moderate and severe pancreatitis were 0.630 (cut off value of 0.41) and 0.621 (cut off 29.33) respectively and sensitivity for respective indicators were 70.9% and 32.7 % respectively. Sensitivity and specificity of procalcitonin at day 1 in predicting moderate -severe pancreatitis in our study were 70.9 % and 55.4 % respectively in comparison to 78.20 % and 69.10% as found by QiYong He et al. and 86% and 63%, as found by Bezmarevic et al.[28,67]

The AUC for MDW in our study was 0.621 with sensitivity of 32.7 % and specificity of 87.7%. Similar results were seen in a study by Abdullah Senlikci et al where AUC for MDW in prediction of severity was 0.618 with sensitivity of 50.94% and specificity of 61.11%. This was in contrast to the study by Crouser ED et al. which showed 0.79 AUC with sensitivity of 77% and specificity of 73% in predicting early SIRS.[56]

The positive and negative predictive values of PCT in our study in predicting disease severity were 57.35% and 69.23% respectively and that of MDW were 88.24% and 61.17% respectively. However combined values of PCT and MDW were found to have a sensitivity of 70.91% and specificity of 55.38% in predicting disease severity with PPV of 57.35% and NPV of 69.23%.

AUC for PCT in predicting organ failure with cut off value of 0.59 was 0.622 with sensitivity of 66.7% and specificity of 59.1% . AUC for role of MDW in organ failure prediction with cut off of 29.75 was 0.602 with sensitivity of 27.8% and specificity of 97% but was not significant (p value 0.056). Similar trends were reported by Wang et al and Senlikci et al. [71,74]

In our study the mean amylase levels on presentation were found to be 545.94 in MAP and 1123 in MSAP+SAP. Significantly higher blood levels were observed in the moderate- severe pancreatitis group as compared to the mild pancreatitis group. This was in accordance with the results seen by Wang et al where the patients with severe acute pancreatitis were characterized with significantly higher concentrations of amylase. Similar trends were observed in lipase levels .Mean lipase values in patients with mild pancreatitis were 1058.74 and the moderate to severe pancreatitis group showed mean lipase levels of 1481.[74]

Our study showed lower TLC values in mild pancreatitis group with mean value of 12.31 * 10^3 / mm3 at presentation as compared to the moderate to severe pancreatitis group which had mean value of that of 14.35 * 10^3 / mm3 . This was in contrast to the findings by Wang et al

where leucocyte counts were significantly lower among patients with severe pancreatitis.

In our study, serum creatinine levels in mild pancreatitis were lower than those in moderate to severe pancreatitis group with a mean value of 0.76 mg/dl in mild pancreatitis and 1.52 mg/dl in the moderate to severe pancreatitis group. However little difference in serum creatinine levels was reported by Wang et al and Yong He et al. Wang et al reported mean values of 0.72 mg/dl in mild and 0.8 mg/dl in severe group and Yong et al reported 0.69 mg/dl in mild and 0.73 mg/dl in severe group.

No significant differences were observed in the blood pH values, s. calcium levels and serum electrolytes.

Hence various lab parameters including inflammatory markers, volumetric cell indices, leucocyte counts, levels of pancreatic enzymes and serum creatinine values can be predictive of severe disease at the time of initial presentation and allow early intensive measures to be taken. Novel biomarkers are under study in continuum to guide early prognostic prediction. Our study shows significant role of procalcitonin and MDW levels in early prediction of severity of disease and procalcitonin levels in prediction of organ failure.

There were however a few limitations in the present study. Comorbidities of the patients were not taken into consideration so their confounding effect on the disease severity, complications and outcome could not be assessed. Irrespective of the duration of disease symptoms, day of admission to the hospital was considered as day 1 for that disease. Another limitation of our study is the relatively small sample size.

SUMMARY AND CONCLUSION

Acute pancreatitis is associated with significant morbidity and mortality with SIRS and MODS being the chief reasons for mortality in the initial phase and local complications along with infected necrosis claiming lives in the latter one. Our study included 120 patients who presented to DMCH with Acute pancreatitis and ability of various lab parameters to predict severity of the disease and organ failure early in the course of disease was assessed. The results for the same are summarised as follows:

- 120 patients with acute pancreatitis were studied out of which 54.2 % patients had mild pancreatitis and 45.8 % patients were studied as moderate to severe pancreatitis.
- Male predominance was seen with 74.2% male population with mean age of MAP being 41.75 years and M+SAP being 45 years.
- The most common aetiologies were alcohol and gall stone induced. While abdominal pain was the single most consistent presenting complaint other symptoms like vomiting, fever, and SOB were more common in moderate/severe cases.
- Complications including AKI, pleural effusions, respiratory distress, hepatorenal involvement and shock were predominantly seen in M+SAP whereas need for ICU care, ventilatory support, ionotropic support, percutaneous drainage, surgical intervention, organ failure were exclusively seen in M+SAP.
- Several laboratory parameters including amylase, procalcitonin, monocyte distribution width, and CRP showed statistically significant differences between mild and moderate/severe cases of acute pancreatitis, indicating potential markers for severity assessment. Other parameters such as pH, PCO2, PO2, lactate, haematocrit, and calcium did not show significant differences between the severity groups in this study.

- The AUC for PCT at day 1 for predicting disease severity was 0.630 with a std error of 0.052. At cut off of 0.41, it could predict disease severity with sensitivity of 70.9%, specificity of 55.4 %, PPV of 57.35% and NPV of 69.23% with 62.5 % accuracy.
- The AUC for MDW at day 1 for predicting disease severity was 0.621 with a std error of 0.051. At cut off of 29.75, it could predict disease severity with sensitivity of 27.27%, specificity of 96.92 %, PPV of 88.24% and NPV of 61.17% with 65.00% accuracy.
- PCT and MDW combined could predict disease severity with sensitivity of 70.91% specificity of 55.38%, PPV of 57.35%, NPV of 69.23%. and accuracy of 62.50%
- AUC for PCT in predicting organ failure with cut off value of 0.59 was 0.622 with sensitivity of 66.7% and specificity of 59.1%. AUC for MDW in organ failure prediction was not significant.

CONCLUSION

Acute pancreatitis is a commonly encountered disease in surgical hospitalization. Accurate assessment of the severity is of paramount importance for its treatment and prognosis. However, the usually used scoring systems and scores in clinical practice are complicated and not precise enough leading to the failure of their clinical application. No one tool works well for all forms of acute pancreatitis. Also, some of them include assessment of parameters at 48-72 hours of admission. Hence biomarkers assume an important role in early prediction of course of disease. PCT and MDW are novel markers which show potential in various studies to serve this purpose. Our study shows similar results but more studies with larger sample size are still needed to verify the findings.

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SR NO.	MRD NO	NAME	AGE	AGE GROUP	SEX	PRESENTING COMPLAINT_PAIN ABDOMEN	ABDOMEN DISTENTION	FEVER	VOMITING	CONSTIPATION	OBSTIPATION	NAUSEA	JAUNDICE	LESS APPETITE
1	1548033	AM	28	1	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
2	1336036	AB	30	1	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
3	1701331	RK	49	3	MALE	YES	NO	NO	YES	YES	NO	NO	NO	NO
4	1718424	SS	29	1	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
5	1639412	S	46	3	MALE	YES	NO	NO	YES	NO	NO	YES	NO	NO
6	1239791	NS	28	1	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
7	1643906	JR	54	4	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
8	1667405	KS	18	1	MALE	YES	NO	YES	YES	NO	NO	YES	NO	NO
9	1646734	DR	60	4	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
10	1653078	SS	25	1	MALE	YES	NO	YES	YES	YES	NO	NO	NO	NO
11	1173532	JS	50	3	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
12	1640728	MS	41	3	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
13	1666715	AR	26	1	MALE	YES	NO	NO	YES	YES	NO	NO	NO	NO
14	1665930	SR	35	2	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
15	1665158	SR	41	3	FEMALE	YES	NO	NO	YES	NO	NO	YES	NO	NO
16	1661471	SN	33	2	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
17	1465910	SK	56	4	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
18	1501969	NR	60	4	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
19	1578812	SK	45	3	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
20	1567605	GS	38	2	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
21	1578706	HS	37	2	MALE	YES	NO	YES	NO	NO	NO	NO	NO	NO
22	1553425	JS	25	1	MALE	YES	NO	YES	YES	NO	NO	YES	NO	NO
23	1674554	HR	66	5	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
24	1621409	HS	21	1	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
25	1704874	JS	50	3	MALE	YES	NO	NO	NO	NO	NO	NO	YES	YES
26	1688480	RKJ	61	5	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
27	1654321	D	18	1	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
28	1709198	BS	44	3	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
29	1644334	BS	44	3	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
30	1711137	RK	39	2	FEMALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
31	1594950	NB	70	5	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
32	1471076	AK	43	3	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
33	1564515	DD	37	2	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
34	1392882	S	18	1	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
35	1646734	DR	60	4	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
36	1689941	SS	45	3	MALE	YES	YES	NO	NO	NO	NO	NO	YES	NO
37	1669989	HS	45	3	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
38	1655529	VK	43	3	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
39	1653702	JK	48	3	MALE	YES	NO	NO	NO	YES	NO	NO	NO	NO
40	1654044	RR	60	4	FEMALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
41	1647779	AR	61	5	FEMALE	YES	NO	NO	YES	YES	NO	NO	NO	NO
42	1635840	KS	26	1	MALE	YES	NO	YES	NO	NO	NO	NO	NO	NO
43	1532449	GS	39	2	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
44	1219662	RP	54	4	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
45	1239791	NS	28	1	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
46	1649709	PK	70	5	FEMALE	YES	NO	NO	YES	NO	NO	YES	NO	NO
47	1648284	JS	28	1	MALE	YES	YES	NO	YES	NO	NO	NO	NO	NO

SR NO.	MRD NO	YELLOWISH DISCOLORATION OF EYES	SOB	COUGH	DURATION IN DAYS	DURATION IN DAYS GP	ETIOLOGY_GALL STONE INDUCED	TRIGLYCERIDES	ALCOHOLIC	TRAUMATIC	HYPERCALCEMIA	ANY OTHER
1	1548033	NO	NO	NO	3	2	YES	NO	NO	NO	NO	NO
2	1336036	NO	NO	NO	2	1	NO	NO	NO	NO	NO	NO
3	1701331	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
4	1718424	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
5	1639412	NO	NO	NO	1	1	NO	NO	YES	NO	NO	NO
6	1239791	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
7	1643906	NO	NO	NO	20	4	YES	NO	NO	NO	NO	NO
8	1667405	NO	NO	NO	20	4	NO	NO	NO	NO	NO	VIRAL
9	1646734	NO	NO	NO	10	4	YES	NO	YES	NO	NO	NO
10	1653078	NO	NO	NO	7	4	YES	NO	NO	NO	NO	NO
11	1173532	NO	NO	NO	2	1	NO	YES	NO	NO	NO	NO
12	1640728	NO	NO	NO	1	1	NO	NO	YES	NO	NO	NO
13	1666715	NO	NO	NO	6	3	NO	NO	YES	NO	NO	NO
14	1665930	NO	NO	NO	6	3	NO	YES	NO	NO	NO	NO
15	1665158	NO	NO	NO	4	2	YES	NO	NO	NO	NO	NO
16	1661471	NO	NO	NO	12	4	YES	NO	NO	NO	NO	NO
17	1465910	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
18	1501969	NO	NO	NO	4	2	YES	NO	NO	NO	NO	NO
19	1578812	NO	NO	NO	3	2	YES	NO	NO	NO	NO	NO
20	1567605	NO	NO	NO	3	2	NO	NO	YES	NO	NO	NO
21	1578706	NO	NO	NO	15	4	NO	NO	YES	NO	NO	NO
22	1553425	YES	NO	NO	8	4	NO	NO	YES	NO	NO	NO
23	1674554	NO	NO	NO	20	4	NO	NO	YES	NO	NO	NO
24	1621409	NO	NO	NO	10	4	NO	NO	NO	YES	NO	NO
25	1704874	NO	NO	NO	7	4	NO	NO	NO	NO	NO	IDIOPATHIC
26	1688480	NO	NO	NO	1	1	YES	NO	NO	NO	NO	NO
27	1654321	NO	NO	NO	1	1	NO	NO	NO	YES	NO	NO
28	1709198	NO	NO	NO	4	2	NO	NO	YES	NO	NO	NO
29	1644334	NO	NO	NO	3	2	NO	NO	YES	NO	NO	NO
30	1711137	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
31	1594950	NO	NO	NO	1	1	NO	NO	NO	NO	NO	DRUG INDUCED
32	1471076	NO	NO	NO	15	4	NO	NO	YES	NO	NO	NO
33	1564515	NO	NO	NO	1	1	NO	NO	YES	NO	NO	NO
34	1392882	NO	NO	NO	3	2	YES	NO	NO	NO	NO	NO
35	1646734	NO	YES	NO	10	4	YES	NO	YES	NO	NO	NO
36	1689941	NO	NO	NO	30	4	NO	NO	YES	NO	NO	NO
37	1669989	NO	NO	NO	4	2	NO	NO	YES	NO	NO	NO
38	1655529	NO	YES	NO	10	4	YES	NO	NO	NO	NO	NO
39	1653702	NO	NO	NO	2	1	NO	NO	NO	NO	NO	IDIOPATHIC
40	1654044	NO	NO	NO	1	1	NO	NO	NO	YES	NO	NO
41	1647779	NO	NO	NO	1	1	NO	NO	NO	NO	NO	DRUG INDUCED
42	1635840	NO	NO	YES	2	1	NO	NO	YES	NO	NO	NO
43	1532449	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
44	1219662	NO	NO	NO	15	4	NO	NO	YES	NO	NO	NO
45	1239791	NO	NO	NO	2	1	YES	NO	YES	NO	NO	NO
46	1649709	NO	YES	NO	3	2	YES	NO	NO	NO	NO	NO
47	1648284	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO

SR NO.	MRD NO	SBP	DBP	PULSE	RESPIRATORY RATE	TEMPERATURE	SPO2	AMYLASE	LIPASE	PROCALCITONIN	MONOCYTE DISTRIBUTION WIDTH	C REACTIVE PROTEIN	ABG (PH)	PCO2	PO2
1	1548033	140	70	88	18	98.8	97	632	6768	0.66	33	299	7.41	35	71
2	1336036	130	70	84	14	99.2	98	260	206	0.08	18.19	385	7.45	37	69
3	1701331	90	60	122	22	AFEBRILE	96	233	350	17.8	29.45	198	7.47	39	16
4	1718424	130	80	98	18	AFEBRILE	98	257	640	0.17	29.05	225	7.46	34	123
5	1639412	130	70	98	20	AFEBRILE	98	387	453	0.91	26.08	260	7.38	43	81
6	1239791	100	60	80	20	AFEBRILE	96	514	548	0.33	29.25	292	7.41	45	90
7	1643906	120	80	86	20	AFEBRILE	98	118	54	0.19	28.4	114	7.44	37	57
8	1667405	100	60	60	22	AFEBRILE	98	367	418	0.8	24.53	88	7.42	35	62
9	1646734	110	70	93	24	AFEBRILE	99	425	522	0.4	23.95	367	7.6	45	60
10	1653078	110	70	82	18	AFEBRILE	98	66	43	0.24	28.4	260	7.43	37	60
11	1173532	110	70	86	22	AFEBRILE	98	173	244	0.4	19.98	12.06	7.38	51	21
12	1640728	160	100	110	20	AFEBRILE	98	2048	3086	0.35	26.4	168	7.43	39	29
13	1666715	120	70	78	20	AFEBRILE	99	237	370	0.12	24.52	217	7.46	41	74
14	1665930	120	90	62	22	AFEBRILE	100	9	25	0.3	19.35	85	7.5	27	115
15	1665158	110	60	88	22	AFEBRILE	99	4214	6096	0.57	29.8	49	7.44	33	115
16	1661471	120	70	86	18	AFEBRILE	99	63	83	0.07	24.5	91	7.41	38	87
17	1465910	120	80	72	20	AFEBRILE	98	2522	7162	0.65	29.6	98	7.38	38	54
18	1501969	160	80	128	22	AFEBRILE	98	541	864	0.4	24.8	86	7.45	27	104
19	1578812	120	80	64	22	AFEBRILE	96	829	916	1.2	27.6	67	7.47	33	80
20	1567605	100	60	86	18	AFEBRILE	98	754	1336	1.84	29.8	298	7.39	32	48
21	1578706	110	70	68	20	AFEBRILE	100	76	82	0.6	24.6	339	7.45	34	45
22	1553425	140	90	106	24	AFEBRILE	92	359	289	0.64	27.8	308	7.52	29	203
23	1674554	90	60	86	20	AFEBRILE	98	64	48	0.03	24.4	155	7.42	35	45
24	1621409	110	90	90	20	AFEBRILE	96	288	198	0.01	26.8	202	7.37	36	48
25	1704874	110	60	102	24	AFEBRILE	99	172	407	0.5	27.6	9.87	7.35	37	44
26	1688480	140	90	74	20	AFEBRILE	95	1949	2994	1.4	29.8	9.9	7.32	56	36
27	1654321	100	60	98	20	AFEBRILE	96	1184	2330	1.64	28.6	0.57	7.38	37	44
28	1709198	100	70	98	20	AFEBRILE	98	689	1360	1.2	19.47	207	7.44	30	124
29	1644334	110	70	82	18	AFEBRILE	97	213	1063	0.8	28.53	29.8	7.31	42	75
30	1711137	120	80	92	24	AFEBRILE	98	1714	3232	1.4	29.4	98	7.4	35	54
31	1594950	100	60	92	22	AFEBRILE	98	1995	1906	1.8	30.4	112	7.37	37	45
32	1471076	100	70	90	20	AFEBRILE	96	391	244	0.3	27.6	4.82	7.45	41	55
33	1564515	140	100	68	20	AFEBRILE	97	1345	2301	0.9	29.6	39.46	7.43	34	54
34	1392882	110	70	90	22	AFEBRILE	99	147	149	0.3	26.4	21	7.38	36	44
35	1646734	110	70	88	18	AFEBRILE	98	112	44	0.4	22.5	367	7.47	36	186
36	1689941	140	90	110	22	AFEBRILE	100	650	521	0.2	28.16	131	7.47	26	76
37	1669989	120	70	98	22	AFEBRILE	98	1222	4125	0.8	23.69	243	7.38	35	58
38	1655529	110	70	135	20	AFEBRILE	100	44	26	0.57	45.7	381	7.3	25	20
39	1653702	120	70	88	20	AFEBRILE	98	338	412	0.6	24.47	367	7.45	30	57
40	1654044	110	70	134	24	AFEBRILE	98	256	394	0.67	33.87	297	7.43	37	64
41	1647779	110	70	94	18	AFEBRILE	98	2748	6000	1.6	23.9	298	7.55	25	78
42	1635840	120	70	82	20	100	98	480	512	1.2	23.62	66	7.45	34	62
43	1532449	110	70	82	18	AFEBRILE	99	374	894	1.4	29.6	98	7.41	37	89
44	1219662	100	60	74	20	AFEBRILE	97	88	48	0.3	23.4	116	7.4	35	87
45	1239791	100	60	80	20	AFEBRILE	96	1169	2003	0.9	29.4	40.87	7.41	45	90
46	1649709	80	P	108	20	AFEBRILE	93	1715	1994	40	35.65	150	7.4	31	93
47	1648284	110	80	74	20	AFEBRILE	98	890	1322	0.633	29.4	84.3	7.38	33	90

SR NO.	MRD NO	LACT	HCT	HCO3	CA2	AMYLASE	LIPASE	PROCALCITONIN	MONOCYTE DISTRIBUTION WIDTH	C REACTIVE PROTEIN	HB	TLC	NEUTROPHIL COUNT	PLATELET COUNT
1	1548033	1.1	35	22.3	1.01	245	340	0.6	28.14	93	11.8	26.7	90.7	467
2	1336036	0.9	41	25.7	1.14	-	54	0.03	27.5	154	13.5	13	75.5	150
3	1701331	1.3	42	28	1.05	117	123	0.37	29.46	88	10.1	11.36	63	471
4	1718424	2.2	38	24	1.03	377	237	0.35	29.23	112	15.8	18.56	84	128
5	1639412	1.6	22	24.4	1.07	130	87	0.81	25.18	94	16.5	17.5	83	110
6	1239791	0.9	41	28.5	1.01%	202	188	0.1	28.54	145	14	14.2	86	248
7	1643906	1.2	35	25	1.07	82	45	0.15	28.1	135	10.8	12.1	70	481
8	1667405	0.9	44	23.4	1.01	168	110	0.05	26.3	111	11.4	5.9	31	365
9	1646734	2.6	38	25.4	1.06	98	64	0.01	22.95	98	11.3	12.25	86	177
10	1653078	1.9	36	24.3	1.01	54	42	0.25	28.2	220	10.6	16.7	74	231
11	1173532	1.1	42	30.2	1.04	110	154	0.06	20.2	161	11.8	10.5	53	150
12	1640728	1.4	44	25.9	1.02	554	687	0.31	27.2	152	17.7	14.31	93	221
13	1666715	0.8	31	29.2	1.14	132	145	0.1	24.2	165	10.3	12.1	78	237
14	1665930	0.7	27	21	1.05	11	21	0.02	20.1	72	9.6	8.8	75	215
15	1665158	1.2	40	22.4	1.07	765	860	0.5	28.95	65	11.2	16.3	96	153
16	1661471	0.9	45	24	1.03	145	2118	0.05	25.1	85	13.3	8.7	75	281
17	1465910	0.6	42	22.5	0.9	555	726	0.3	28.9	76	11.7	4.5	72	56
18	1501969	1.2	33	18.8	0.95	154	201	0.05	24.2	56	10.5	18.7	83	201
19	1578812	0.9	46	24	0.99	226	254	1.2	27.4	52	14.6	15	87	153
20	1567605	1.3	45	19.4	0.77	320	364	1.64	28.8	194	14.4	11.4	79	131
21	1578706	1.1	43	23.3	1.03	54	42	0.08	24.2	228	10.6	14.1	81	415
22	1553425	0.7	35	23.7	1	192	126	0.53	26.8	276	13	6.2	73	150
23	1674554	0.6	42	24.2	1.02	58	36	0.03	24.2	108	11.3	16	63	525
24	1621409	0.9	44	23.2	0.9	128	108	0.01	24.4	158	13.4	8.5	49	241
25	1704874	1.1	42	24.2	1.02	128	154	0.07	26.8	8	14	9.5	67	201
26	1688480	2.1	45	29	1.07	81	96	0.9	26.8	262	13.4	12.4	88	222
27	1654321	1.3	40	24.2	1.02	679	2340	1.3	29.2	302	13.4	9.4	82	186
28	1709198	1.2	37	20.4	0.53	335	558	0.14	25	97	13.4	12.4	85	167
29	1644334	4.4	47	21	1.04	186	495	0.6	29.8	88	15.6	11.3	89	226
30	1711137	0.9	45	23.4	1.01	656	878	1.2	29.6	86	12.3	11.1	92	410
31	1594950	1.6	47	20.6	0.8	454	756	1.4	29.8	128	10	7.9	77	124
32	1471076	0.8	41	24.2	1.2	186	118	0.02	26.8	12	7.5	6.6	65	349
33	1564515	1.3	59	22.6	0.95	454	666	0.7	29.4	112	15.3	12	92	205
34	1392882	0.9	42	24.6	1.2	82	68	0.02	26.2	8	11.4	6.4	42	156
35	1646734	1.2	34	26	1.08	66	42	0.1	25.1	225	11.3	12.2	85	177
36	1689941	1.5	42	18.9	0.94	324	241	0.1	29.18	115	12.1	25.4	92	62
37	1669989	1.2	42	22.3	0.9	224	668	0.6	26.03	141	12.6	14.3	90	216
38	1655529	1.3	16	12.3	1.3	38	26	0.4	38.1	367	10.1	0.85	76	195
39	1653702	1.4	50	20.9	0.098	256	342	0.6	23.99	337	15.7	16.7	91	150
40	1654044	4.3	39	24.6	0.7	142	294	1.2	25.6	202	12	13.3	89	162
41	1647779	0.9	35	21.9	0.9	755	922	0.41	25.6	352	11.9	12.7	86	334
42	1635840	0.8	35	22.5	1.1	225	290	0.2	26.145	89	10.8	17.5	70	359
43	1532449	1	48	23.5	0.94	212	452	0.9	28.4	198	14.4	10.87	81	240
44	1219662	1.6	36	21.7	1.17	56	38	0.03	19.08	92	12.2	4.6	61	101
45	1239791	0.9	41	28.5	1.01	666	874	0.7	27.4	178	14	14.2	86	248
46	1649709	3	33	18.4	1.01	745	820	24.1	33.5	226	10.6	35.7	93	124
47	1648284	1.1	50	19.5	1.04	376	677	0.4	29.2	265	16.4	16	87	186

SR NO.	MRD NO	HEMATOCRIT	RDW	INR	BILIRUBIN (T)	BILIRUBIN (D)	SGOT	SGPT	ALP	TOTAL PROTEIN	ALBUMIN	Na	K	Cl	Cr	Urea
1	1548033	35.6	17.6	1.28	1.15	0.31	61	52	136	5.4	2.7	136	3.87	101	0.4	21
2	1336036	41.2	15	1.29	1.03	0.45	26	50	81	6.9	3.63	141	3.61	101	0.79	28
3	1701331	32	15	1.4	1.04	0.74	76	45	321	7.1	3.17	130	4.18	90	0.66	38
4	1718424	47	13	1.19	2.13	0.86	36	32	156	6.5	3.84	133	3.81	93	0.74	26
5	1639412	50	13.6	1.18	0.56	0.18	45	20	187	5.7	2.73	144	4.42	109	2.74	120
6	1239791	42.9	15.2	1.17	0.68	0.23	68	42	135	5.5	3.3	138	3.8	110	0.72	92
7	1643906	41	15.6	1.67	1.08	0.8	14	13	87	5.5	2.8	129	3.8	93	0.69	13
8	1667405	35	14.8	1.04	0.57	0.26	56	65	192	7.5	4	139	4.04	100	0.36	10
9	1646734	33	15.7	1.17	2.12	1.46	42	41	152	5.2	2.57	134	3.79	101	0.52	26
10	1653078	39.6	13.9	1.44	0.64	0.3	26	31	112	6.8	3.4	137	3.82	98	0.74	26
11	1173532	36.4	14	1.08	0.31	0.12	21	16	94	9.1	5.15	138	4.19	101	0.83	24
12	1640728	52	14	1.19	1.36	0.51	45	28	108	6.6	3.8	136	4.2	101	0.92	23
13	1666715	31	16	1.16	1.02	0.28	84	64	98	5.8	3.4	139	4.05	100	0.54	7
14	1665930	34	15.8	1.09	0.71	0.11	19	10	117	6.2	3.2	133	4.64	96	0.4	5
15	1665158	40	15	1.13	3.64	1.46	248	373	579	6.9	3.6	13.6	4.73	101	0.61	18
16	1661471	41	14	1.71	0.53	0.3	49	29	128	6.7	3.3	140	4.3	105	0.95	35
17	1465910	36	15	1.21	3	1.6	35	26	56	6.1	3.8	135	4.1	100	1.6	44
18	1501969	78	16	1.5	0.29	0.6	56	54	84	5.8	2.8	135	3	99	0.58	106
19	1578812	45	14.6	1.05	1.25	0.21	297	535	122	6.4	3.9	134	4.1	99	0.82	32
20	1567605	42	15	1.31	2.84	1.51	143	54	41	5.4	3.1	130	4.3	94	5.1	91
21	1578706	32	15	1.25	0.24	0.17	15	16	124	5.8	3.3	135	4	97	0.52	214
22	1553425	40	15	1.25	4.86	3.35	51	54	55	5.3	2.8	138	3.8	104	1.9	85
23	1674554	35	15	1.2	0.75	0.2	37	30	84	6.3	2.2	129	4.5	95	0.5	28
24	1621409	41.5	18	1.11	0.42	0.06	38	41	98	7.4	4.2	141	3.98	102	0.82	28
25	1704874	42	16	1.03	10.07	6.87	156	386	153	7.8	3.73	136	4.62	102	0.87	33
26	1688480	42	16	1.12	1.7	0.51	27	20	54	5.6	3.04	138	4.2	102	0.7	32
27	1654321	40	13	1.2	0.45	0.22	28	15	337	6.4	4.26	137	4.3	99	0.49	18
28	1709198	41	15	1.03	1.97	0.43	168	5	154	6.5	3.4	137	4.5	104	0.95	11
29	1644334	46	13.5	1.14	1.4	0.29	46	25	47	6.3	3.7	138	4.5	101	0.66	22
30	1711137	38	22	1.06	2.21	1.37	405	390	673	7.6	4.6	140	3.38	106	0.68	14
31	1594950	29.6	13.8	1	0.34	0.12	25	26	118	7.1	4.3	137	4.3	101	1.01	49
32	1471076	22.4	15	1.16	4.479	0.29	73	102	129	5.6	3.3	142	4.53	106	1.02	17
33	1564515	48	14.6	1.01	0.97	0.45	36	36	78	6	3.5	139	4.3	107	1.5	25
34	1392882	34.5	13.6	1.44	1.07	0.24	42	19	148	6.7	4.28	139	3.75	106	0.8	17
35	1646734	33	15.7	1.17	3.61	1.32	81	45	140	5	2.7	144	4.5	107	0.53	33
36	1689941	36	13	2.35	7.69	6.91	96	42	270	6.6	2.7	133	3.29	98	1.29	80
37	1669989	38	14	1.14	1.32	0.51	53	19	55	4.8	2.6	145	3.05	111	0.69	35
38	1655529	30.6	14.7	1.59	1.6	0.8	76	72	118	4.6	2.8	164	3.41	133	0.95	52
39	1653702	48.5	13.6	1.12	1.22	0.253	32	26	64	6.3	3.8	134	4.62	97	1.37	66
40	1654044	37.4	14.6	1.23	2.47	1.12	69	36	95	6.1	3.35	160	2.98	120	0.71	32
41	1647779	37	16.6	1.09	0.26	0.09	19	18	89	7	4.14	140	4.95	102	0.66	29
42	1635840	28	13.8	1.59	1.44	0.01	56	31	193	9.8	3.05	127	4.174	92	0.66	11
43	1532449	42.6	16.9	1.05	0.98	0.45	48	78	154	7.5	4.45	134	4.47	98	0.85	26
44	1219662	36.2	13.1	1.14	0.75	0.2	110	160	367	6.3	4.12	138	3.49	104	0.68	17
45	1239791	43	15.2	1.17	0.69	0.14	46	40	48	6.7	4.42	138	3.8	102	0.87	26
46	1649709	32.8	15.5	1.42	5.82	3.91	434	326	141	5.1	3.18	139	2.97	106	1.45	53
47	1648284	49.3	13.4	1.12	1.1	0.18	97	164	69	7.1	4.64	133	4.89	101	0.86	33

SR NO.	MRD NO	RADIOLOGICAL FINDINGS_evidence of pancreatitis	severity	GP	peri pancreatic collections	necrosis	duct disruption	cholelithiasis	congenital anomaly	fat stranding	other findings
1	1548033	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
2	1336036	NO	MILD	1	NO	NO	NO	NO	NO	NO	NO
3	1701331	YES	MODERATE	2	YES	NO	NO	NO	NO	NO	NO
4	1718424	NO	MILD	1	NO	NO	NO	NO	NO	NO	NO
5	1639412	YES	MODERATE	2	YES	NO	NO	NO	NO	NO	NO
6	1239791	NO	MILD	1	NO	NO	NO	NO	NO	NO	NO
7	1643906	YES	MILD	1	YES	YES	NO	YES	NO	NO	NO
8	1667405	YES	MILD	1	NO	NO	NO	NO	NO	NO	NO
9	1646734	YES	SEVERE	2	YES	YES	YES	NO	NO	NO	NO
10	1653078	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
11	1173532	NO	MILD	1	NO	NO	NO	NO	NO	NO	NO
12	1640728	YES	SEVERE	2	YES	NO	NO	YES	NO	NO	NO
13	1666715	YES	MODERATE	2	YES	NO	NO	NO	NO	YES	NO
14	1665930	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
15	1665158	YES	SEVERE	2	NO	NO	NO	YES	NO	YES	NO
16	1661471	YES	MILD	1	NO	NO	NO	YES	YES	YES	CHOLEDOCHOLITHIASIS
17	1465910	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
18	1501969	YES	MODERATE	2	NO	YES	NO	NO	NO	NO	NO
19	1578812	YES	MILD	1	YES	NO	NO	YES	NO	YES	NO
20	1567605	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	NO
21	1578706	YES	MODERATE	2	YES	NO	NO	NO	NO	NO	PESUDOCYST
22	1553425	YES	SEVERE	2	YES	NO	NO	NO	NO	YES	NO
23	1674554	YES	MILD	1	YES	NO	NO	NO	NO	NO	NO
24	1621409	YES	MODERATE	2	YES	NO	NO	NO	NO	NO	PESUDOCYST
25	1704874	YES	MODERATE	2	NO	NO	NO	NO	NO	NO	NO
26	1688480	YES	SEVERE	2	YES	NO	NO	YES	NO	NO	NO
27	1654321	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
28	1709198	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	NO
29	1644334	YES	MILD	1	YES	NO	NO	NO	NO	YES	NO
30	1711137	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
31	1594950	YES	MILD	1	YES	NO	NO	NO	NO	YES	NO
32	1471076	YES	MILD	1	YES	YES	NO	NO	NO	NO	NO
33	1564515	YES	SEVERE	2	YES	NO	NO	NO	NO	NO	NO
34	1392882	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
35	1646734	YES	SEVERE	2	YES	YES	YES	YES	NO	NO	NO
36	1689941	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	CIRRHOSIS WITH PHT
37	1669989	YES	MODERATE	2	YES	YES	NO	NO	NO	NO	NO
38	1655529	YES	SEVERE	2	YES	YES	NO	YES	NO	NO	NO
39	1653702	YES	MILD	1	YES	NO	NO	NO	NO	YES	NO
40	1654044	NO	SEVERE	2	NO	NO	NO	NO	NO	NO	NO
41	1647779	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
42	1635840	YES	SEVERE	2	YES	NO	NO	NO	NO	YES	NO
43	1532449	YES	MILD	1	YES	YES	NO	NO	NO	NO	NO
44	1219662	YES	MILD	1	NO	NO	NO	NO	YES	YES	GROOVE PANCREATITIS
45	1239791	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
46	1649709	YES	SEVERE	2	YES	NO	NO	YES	NO	YES	NO
47	1648284	YES	SEVERE	2	NO	NO	NO	YES	NO	NO	NO

SR NO.	MRD NO	SYMPTOMS_ABDOMINAL PAIN	ABDOMINAL DISTENTION	NAUSEA	VOMITING	FEVER	BREATHLESSNESS	DECREASED URINE OUTPUT	YELLOWISH DISCOLORATION OF URINE	CLAY COLORED STOOLS
1	1548033	YES	NO	YES	NO	NO	NO	NO	NO	NO
2	1336036	YES	NO	NO	YES	YES	NO	NO	NO	NO
3	1701331	YES	YES	YES	YES	NO	NO	NO	NO	NO
4	1718424	YES	NO	YES	YES	NO	NO	NO	NO	NO
5	1639412	YES	NO	YES	NO	NO	NO	YES	NO	NO
6	1239791	YES	NO	YES	YES	NO	NO	NO	NO	NO
7	1643906	YES	YES	YES	NO	NO	NO	NO	NO	NO
8	1667405	YES	NO	YES	YES	YES	NO	NO	NO	NO
9	1646734	YES	YES	YES	YES	NO	YES	NO	NO	NO
10	1653078	YES	NO	NO	YES	YES	NO	NO	NO	NO
11	1173532	YES	NO	NO	YES	NO	NO	NO	NO	NO
12	1640728	YES	NO	YES	YES	NO	YES	YES	NO	NO
13	1666715	YES	NO	YES	YES	NO	NO	NO	NO	NO
14	1665930	YES	NO	NO	YES	NO	NO	NO	NO	NO
15	1665158	YES	NO	YES	YES	NO	NO	YES	NO	NO
16	1661471	YES	YES	NO	YES	NO	NO	NO	NO	NO
17	1465910	YES	NO	NO	YES	NO	NO	NO	NO	NO
18	1501969	YES	YES	NO	YES	NO	NO	NO	NO	NO
19	1578812	YES	NO	NO	NO	NO	NO	NO	NO	NO
20	1567605	YES	YES	NO	YES	NO	YES	YES	NO	NO
21	1578706	YES	NO	NO	NO	YES	NO	NO	NO	NO
22	1553425	YES	YES	YES	YES	YES	NO	NO	NO	NO
23	1674554	YES	NO	YES	NO	NO	NO	NO	NO	NO
24	1621409	YES	NO	NO	YES	NO	NO	YES	NO	NO
25	1704874	YES	NO	YES	YES	NO	NO	NO	YES	YES
26	1688480	YES	NO	NO	NO	YES	YES	NO	NO	NO
27	1654321	YES	NO	NO	YES	NO	NO	NO	NO	NO
28	1709198	YES	YES	YES	NO	NO	YES	YES	NO	NO
29	1644334	YES	NO	NO	YES	NO	NO	NO	NO	NO
30	1711137	YES	NO	YES	NO	NO	NO	NO	NO	NO
31	1594950	YES	NO	NO	YES	NO	NO	NO	NO	NO
32	1471076	YES	NO	YES	NO	NO	NO	NO	NO	NO
33	1564515	YES	NO	NO	NO	NO	NO	YES	NO	NO
34	1392882	YES	NO	NO	NO	NO	NO	NO	NO	NO
35	1646734	YES	YES	NO	YES	NO	YES	NO	NO	NO
36	1689941	YES	YES	NO	NO	NO	YES	YES	YES	YES
37	1669989	YES	NO	YES	NO	NO	NO	YES	NO	NO
38	1655529	YES	NO	YES	NO	NO	YES	NO	NO	NO
39	1653702	YES	NO	NO	NO	NO	NO	NO	NO	NO
40	1654044	YES	NO	YES	NO	NO	YES	NO	NO	NO
41	1647779	YES	NO	NO	YES	NO	NO	NO	NO	NO
42	1635840	YES	NO	NO	NO	YES	NO	YES	NO	NO
43	1532449	YES	NO	NO	YES	NO	NO	NO	NO	NO
44	1219662	YES	NO	NO	YES	NO	NO	NO	NO	NO
45	1239791	YES	NO	NO	YES	NO	NO	NO	NO	NO
46	1649709	YES	NO	YES	YES	NO	YES	YES	NO	NO
47	1648284	YES	YES	NO	YES	NO	NO	NO	NO	NO

SR NO.	MRD NO	SIGNS_TENDERNESS	GUARDING & RIGIDITY	ASCITES	PLEURAL EFFUSION	PALLOR	ICTERUS	LENGTH OF HOSPITAL STAY IN DAYS	LENGTH OF HOSPITAL STAY IN DAYS GP	NEED FOR ICU CARE
1	1548033	YES	NO	NO	NO	NO	NO	7	1	NO
2	1336036	YES	NO	NO	NO	NO	NO	6	1	NO
3	1701331	NO	NO	YES	NO	NO	NO	8	2	NO
4	1718424	YES	NO	NO	NO	NO	NO	5	1	NO
5	1639412	YES	NO	NO	NO	NO	NO	20	3	NO
6	1239791	YES	NO	NO	NO	NO	NO	5	1	NO
7	1643906	YES	NO	NO	NO	NO	NO	11	2	NO
8	1667405	NO	NO	NO	NO	NO	NO	6	1	NO
9	1646734	YES	NO	NO	YES	NO	NO	30	3	YES
10	1653078	NO	NO	NO	NO	NO	NO	5	1	NO
11	1173532	NO	NO	NO	NO	NO	NO	5	1	NO
12	1640728	YES	NO	NO	YES	NO	NO	18	3	YES
13	1666715	YES	NO	NO	YES	NO	NO	5	1	NO
14	1665930	YES	NO	NO	NO	NO	NO	5	1	NO
15	1665158	YES	NO	NO	NO	NO	YES	8	2	NO
16	1661471	YES	NO	NO	NO	NO	NO	16	3	NO
17	1465910	YES	NO	NO	NO	NO	NO	9	2	NO
18	1501969	YES	NO	NO	NO	NO	NO	13	2	NO
19	1578812	YES	NO	NO	NO	NO	NO	5	1	NO
20	1567605	YES	NO	NO	YES	NO	NO	21	3	YES
21	1578706	YES	NO	NO	NO	NO	NO	5	1	NO
22	1553425	YES	NO	NO	NO	NO	YES	17	3	YES
23	1674554	YES	NO	NO	NO	NO	NO	5	1	NO
24	1621409	YES	NO	NO	NO	NO	NO	10	2	NO
25	1704874	YES	NO	NO	NO	NO	YES	5	1	NO
26	1688480	YES	NO	NO	YES	NO	NO	14	2	YES
27	1654321	YES	NO	NO	NO	NO	NO	5	1	NO
28	1709198	YES	NO	NO	YES	NO	NO	13	2	YES
29	1644334	YES	NO	NO	NO	NO	NO	6	1	NO
30	1711137	YES	NO	NO	NO	NO	NO	6	1	NO
31	1594950	YES	NO	NO	NO	NO	NO	5	1	NO
32	1471076	YES	NO	NO	NO	NO	NO	5	1	NO
33	1564515	YES	NO	NO	NO	NO	NO	13	2	YES
34	1392882	YES	NO	NO	NO	NO	NO	5	1	NO
35	1646734	YES	NO	NO	YES	NO	NO	30	3	YES
36	1689941	YES	NO	YES	NO	NO	YES	14	2	YES
37	1669989	YES	NO	NO	NO	NO	NO	20	3	NO
38	1655529	YES	NO	NO	NO	NO	NO	25	3	YES
39	1653702	YES	NO	NO	NO	NO	NO	7	1	NO
40	1654044	YES	NO	YES	YES	NO	NO	5	1	YES
41	1647779	YES	NO	NO	NO	NO	NO	8	2	NO
42	1635840	NO	NO	NO	NO	NO	NO	17	3	YES
43	1532449	NO	NO	NO	NO	NO	NO	5	1	NO
44	1219662	YES	NO	NO	NO	NO	NO	6	1	NO
45	1239791	YES	NO	NO	NO	NO	NO	5	1	NO
46	1649709	NO	NO	NO	NO	NO	NO	8	2	YES
47	1648284	YES	NO	YES	YES	NO	NO	10	2	YES

SR NO.	MRD NO	VENTILATORY SUPPORT	NEED FOR INOTROPES	NEED FOR SURGICAL INTERVENTION	NECROSECTOMY	PERCUTANEOUS CATHETER	DRANAGE	ENDOSCOPIC DRAINAGE	ORGAN FAILURE OCCURRENCE/MODS
1	1548033	NO	NO	NO	NO	NO	NO	NO	NO
2	1336036	NO	NO	NO	NO	NO	NO	NO	NO
3	1701331	NO	NO	NO	NO	YES	NO	NO	NO
4	1718424	NO	NO	NO	NO	NO	NO	NO	NO
5	1639412	NO	NO	NO	NO	NO	NO	NO	NO
6	1239791	NO	NO	NO	NO	NO	NO	NO	NO
7	1643906	NO	NO	NO	NO	NO	NO	NO	NO
8	1667405	NO	NO	NO	NO	NO	NO	NO	NO
9	1646734	NO	NO	NO	NO	YES	YES	YES	NO
10	1653078	NO	NO	NO	NO	NO	NO	NO	NO
11	1173532	NO	NO	NO	NO	NO	NO	NO	NO
12	1640728	NO	NO	NO	NO	NO	NO	NO	NO
13	1666715	NO	NO	NO	NO	NO	NO	NO	NO
14	1665930	NO	NO	NO	NO	NO	NO	NO	NO
15	1665158	NO	YES	NO	NO	NO	YES	YES	NO
16	1661471	NO	NO	NO	NO	NO	YES	YES	NO
17	1465910	NO	NO	NO	NO	NO	NO	NO	NO
18	1501969	NO	NO	NO	NO	NO	NO	NO	NO
19	1578812	NO	NO	NO	NO	NO	NO	NO	NO
20	1567605	YES	YES	NO	NO	NO	YES	YES	NO
21	1578706	NO	NO	NO	NO	NO	NO	NO	NO
22	1553425	YES	NO	YES	NO	YES	NO	NO	NO
23	1674554	NO	NO	NO	NO	NO	NO	NO	NO
24	1621409	NO	NO	YES	NO	YES	NO	NO	NO
25	1704874	NO	NO	NO	NO	NO	NO	NO	NO
26	1688480	NO	YES	NO	NO	NO	YES	NO	YES
27	1654321	NO	NO	NO	NO	NO	NO	NO	NO
28	1709198	NO	NO	NO	NO	NO	NO	NO	NO
29	1644334	NO	NO	NO	NO	NO	NO	NO	NO
30	1711137	NO	NO	NO	NO	NO	NO	NO	NO
31	1594950	NO	NO	NO	NO	NO	NO	NO	NO
32	1471076	NO	NO	NO	NO	NO	NO	NO	NO
33	1564515	NO	NO	NO	NO	NO	NO	NO	NO
34	1392882	NO	NO	NO	NO	NO	NO	NO	NO
35	1646734	NO	NO	YES	NO	YES	YES	YES	NO
36	1689941	NO	YES	NO	NO	NO	NO	NO	NO
37	1669989	NO	NO	YES	NO	YES	NO	NO	NO
38	1655529	NO	NO	YES	NO	YES	NO	NO	NO
39	1653702	NO	NO	NO	NO	NO	NO	NO	NO
40	1654044	NO	YES	NO	NO	NO	NO	NO	NO
41	1647779	NO	NO	NO	NO	NO	NO	NO	NO
42	1635840	NO	NO	YES	NO	YES	NO	NO	YES
43	1532449	NO	NO	NO	NO	NO	NO	NO	NO
44	1219662	NO	NO	NO	NO	NO	NO	NO	NO
45	1239791	NO	NO	NO	NO	NO	NO	NO	NO
46	1649709	NO	YES	NO	NO	NO	NO	NO	NO
47	1648284	NO	NO	NO	NO	NO	NO	NO	NO

SR NO.	MRD NO	COMPLICATIONS OF ACUTE PANCREATITIS	PERIPANCREATIC COLLECTION	ACUTE NECROTIZING PANCREATITIS	AKI	RESPIRATORY FAILURE	PLEURAL EFFUSION	SHOCK	OTHER	DISCHARGED/DAMA/DICHARGE ON REQUEST/EXPIRED
1	1548033	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
2	1336036	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
3	1701331	YES	YES	NO	NO	NO	NO	NO	NO	DISCHARGED
4	1718424	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
5	1639412	YES	NO	NO	YES	NO	NO	NO	NO	DISCHARGED
6	1239791	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
7	1643906	YES	NO	YES	NO	NO	NO	NO	NO	DISCHARGED
8	1667405	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
9	1646734	YES	NO	NO	NO	NO	YES	NO	NO	DISCHARGED
10	1653078	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
11	1173532	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
12	1640728	YES	NO	NO	YES	NO	YES	NO	NO	DISCHARGED
13	1666715	YES	NO	NO	NO	NO	YES	NO	NO	DISCHARGED
14	1665930	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
15	1665158	YES	NO	NO	YES	NO	NO	NO	NO	DISCHARGED
16	1661471	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
17	1465910	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
18	1501969	YES	YES	NO	NO	NO	NO	NO	NO	DISCHARGED
19	1578812	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
20	1567605	YES	NO	NO	YES	YES	NO	NO	NO	DISCHARGED
21	1578706	YES	NO	NO	NO	NO	NO	NO	PSEUDOCYST	DISCHARGED
22	1553425	YES	YES	NO	YES	NO	YES	NO	NO	DISCHARGED
23	1674554	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
24	1621409	YES	NO	NO	NO	NO	NO	NO	PSEUDOCYST	DISCHARGED
25	1704874	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
26	1688480	YES	YES	NO	NO	YES	NO	NO	NO	DISCHARGED
27	1654321	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
28	1709198	YES	NO	YES	YES	NO	NO	NO	NO	DAMA
29	1644334	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
30	1711137	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
31	1594950	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
32	1471076	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
33	1564515	YES	NO	NO	YES	NO	NO	NO	NO	DISCHARGED
34	1392882	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
35	1646734	YES	NO	NO	NO	NO	NO	NO	DUCT DISRUPTION	DISCHARGED
36	1689941	YES	NO	NO	YES	NO	NO	NO	NO	DISCHARGE ON REQUEST
37	1669989	YES	NO	YES	NO	NO	NO	NO	NO	DISCHARGED
38	1655529	YES	NO	NO	NO	YES	NO	NO	WON	DAMA
39	1653702	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
40	1654044	YES	NO	NO	NO	YES	NO	YES	HYPOCALCEMIA	DAMA
41	1647779	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
42	1635840	YES	YES	NO	YES	NO	NO	NO	NO	DISCHARGE ON REQUEST
43	1532449	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
44	1219662	YES	NO	NO	NO	NO	NO	NO	GROSS ASCITES	DAMA
45	1239791	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
46	1649709	YES	NO	NO	YES	NO	NO	YES	NO	DISCHARGED
47	1648284	YES	NO	NO	NO	NO	YES	NO	NO	DAMA

SR NO.	MRD NO	NAME	AGE	AGE GROUP	SEX	PRESENTING COMPLAINT_PAIN ABDOMEN	ABDOMEN DISTENTION	FEVER	VOMITING	CONSTIPATION	OBSTIPATION	NAUSEA	JAUNDICE	LESS APPETITE
48	1173532	JS	50	3	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
49	1657528	KD	67	5	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
50	1646216	KS	78	5	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
51	1685453	JS	31	2	MALE	YES	YES	NO	YES	NO	NO	NO	NO	NO
52	1685561	GS	70	5	MALE	YES	NO	NO	NO	YES	NO	NO	NO	NO
53	1647533	RC	50	3	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
54	1640675	CK	65	5	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
55	1639879	YS	30	1	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
56	1679155	AK	59	4	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
57	1681343	JS	37	2	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
58	1674082	R	32	2	FEMALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
59	1067844	KS	30	1	MALE	YES	NO	NO	NO	NO	YES	NO	NO	NO
60	751445	BS	44	3	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
61	1714079	KS	44	3	MALE	YES	NO	YES	NO	NO	NO	NO	NO	NO
62	1665232	SS	40	2	MALE	YES	NO	NO	NO	YES	NO	NO	NO	NO
63	1649417	VK	65	5	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
64	1695292	KS	25	1	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
65	1646442	C	21	1	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
66	1465958	NK	37	2	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
67	1491700	AS	34	2	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
68	1504929	SG	31	2	MALE	YES	NO	NO	NO	NO	NO	NO	YES	YES
69	1492020	NK	38	2	FEMALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
70	1336036	AB	29	1	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
71	1547395	M	44	3	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
72	1122065	K	57	4	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
73	1553425	JS	25	1	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
74	1593617	SK	75	5	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
75	1594956	NB	70	5	FEMALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
76	1592277	P	35	2	FEMALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
77	1599168	JS	46	3	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
78	1597794	RS	45	3	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
79	1628222	PK	50	3	FEMALE	YES	YES	NO	NO	NO	NO	NO	YES	NO
80	1465958	SD	32	2	FEMALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
81	1634135	GS	44	3	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
82	1639412	S	46	3	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
83	1173532	JS	56	4	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
84	1688480	RJ	61	5	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
85	1704874	JS	50	3	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
86	1643402	TG	42	3	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
87	1710227	GS	43	3	MALE	YES	NO	YES	YES	NO	NO	YES	NO	NO
88	1718144	AK	37	2	MALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
89	1691998	GS	37	2	MALE	YES	YES	NO	NO	YES	NO	YES	NO	NO

SR NO.	MRD NO	YELLOWISH DISCOLORATION OF EYES	SOB	COUGH	DURATION IN DAYS	DURATION IN DAYS GP	ETIOLOGY_GALL STONE INDUCED	TRIGLYCERIDES	ALCOHOLIC	TRAUMATIC	HYPERCALCEMIA	ANY OTHER
48	1173532	NO	NO	NO	2	1	NO	YES	NO	NO	NO	NO
49	1657528	NO	NO	NO	3	2	YES	NO	NO	NO	NO	NO
50	1646216	NO	NO	NO	3	2	NO	NO	NO	NO	NO	IDIOPATHIC
51	1685453	NO	NO	NO	7	4	YES	NO	NO	NO	NO	NO
52	1685561	NO	NO	NO	1	1	NO	NO	NO	YES	NO	NO
53	1647533	NO	NO	NO	30	4	NO	NO	YES	NO	NO	NO
54	1640675	NO	NO	NO	1	1	YES	NO	NO	NO	NO	NO
55	1639879	NO	NO	NO	1	1	NO	NO	YES	NO	NO	NO
56	1679155	NO	NO	NO	9	4	YES	NO	NO	NO	NO	NO
57	1681343	NO	NO	NO	1	1	NO	NO	YES	NO	NO	NO
58	1674082	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
59	1067844	NO	NO	NO	3	2	NO	NO	NO	NO	NO	NO
60	751445	NO	NO	NO	1	1	YES	NO	YES	NO	NO	NO
61	1714079	NO	NO	NO	15	4	NO	NO	YES	NO	YES	NO
62	1665232	NO	NO	NO	4	2	NO	NO	YES	NO	NO	NO
63	1649417	NO	NO	NO	7	4	NO	NO	YES	NO	NO	NO
64	1695292	NO	NO	NO	6	3	YES	NO	NO	NO	NO	NO
65	1646442	NO	NO	NO	3	2	YES	NO	NO	NO	NO	NO
66	1465958	NO	NO	NO	2	1	NO	NO	NO	NO	NO	IDIOPATHIC
67	1491700	NO	NO	NO	2	1	YES	NO	YES	NO	NO	NO
68	1504929	NO	NO	NO	1	1	NO	NO	YES	NO	NO	NO
69	1492020	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
70	1336036	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
71	1547395	NO	NO	NO	3	2	YES	NO	NO	NO	NO	NO
72	1122065	NO	NO	NO	10	4	YES	NO	NO	NO	NO	NO
73	1553425	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
74	1593617	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
75	1594956	NO	NO	NO	1	1	NO	NO	NO	NO	NO	DRUG INDUCED
76	1592277	NO	NO	NO	3	2	NO	NO	NO	NO	NO	IDIOPATHIC
77	1599168	NO	NO	NO	6	3	NO	NO	YES	NO	NO	NO
78	1597794	NO	YES	NO	4	2	NO	NO	YES	NO	NO	NO
79	1628222	NO	NO	NO	12	4	YES	NO	NO	NO	NO	NO
80	1465958	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
81	1634135	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
82	1639412	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
83	1173532	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
84	1688480	NO	NO	NO	1	1	YES	NO	NO	NO	NO	NO
85	1704874	NO	NO	NO	2	1	NO	NO	NO	NO	NO	IDIOPATHIC
86	1643402	NO	NO	NO	4	2	YES	NO	NO	NO	NO	NO
87	1710227	NO	NO	NO	6	3	NO	NO	YES	NO	NO	NO
88	1718144	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
89	1691998	NO	NO	NO	1	1	NO	NO	YES	NO	NO	NO

SR NO.	MRD NO	SBP	DBP	PULSE	RESPIRATORY RATE	TEMPERATURE	SPO2	AMYLASE	LIPASE	PROCALCITONIN	MONOCYTE DISTRIBUTION WIDTH	C REACTIVE PROTEIN	ABG (PH)	PCO2	PO2
48	1173532	130	80	102	24	AFEBRILE	99	173	294	0.05	19.98	12.06	7.42	37	72
49	1657528	140	90	90	24	AFEBRILE	97	1306	879	0.83	28.8	373	7.36	34	67
50	1646216	150	80	60	24	AFEBRILE	97	4064	8268	2.5	28.7	184	7.1	39	88
51	1685453	120	80	88	24	AFEBRILE	98	1348	1936	0.83	27.62	309	7.42	36	73
52	1685561	110	70	20	20	AFEBRILE	94	1423	1008	0.3	25.9	108	7.46	35	76
53	1647533	110	70	110	20	AFEBRILE	97	28	14	0.34	26.2	110	7.52	49	87
54	1640675	100	70	83	20	AFEBRILE	95	434	1032	12.02	29.47	216	7.47	24	71
55	1639879	130	70	155	26	AFEBRILE	93	669	337	0.86	26.28	401	7.42	37	65
56	1679155	130	80	72	18	AFEBRILE	98	117	191	0.03	23.63	136	7.43	41	45
57	1681343	110	90	78	20	AFEBRILE	99	1213	1462	0.1	17.99	102	7.33	27	124
58	1674082	110	70	70	24	AFEBRILE	100	180.3	4398	0.4	26.72	128	7.41	32	52
59	1067844	90	60	80	24	AFEBRILE	97	280	116	0.08	21.3	247	7.35	41	65
60	751445	110	80	62	16	AFEBRILE	93	90	178	0.04	27.25	78.69	7.31	51	100
61	1714079	110	70	106	20	99	95	9845	3720	0.42	60.69	62.91	7.3	48	77
62	1665232	200	120	114	24	AFEBRILE	96	699	1700	0.35	28.42	129.26	7.28	52	53
63	1649417	130	80	80	24	AFEBRILE	100	57	94	2.2	29.7	145.5	7.34	42	65
64	1695292	120	80	124	24	AFEBRILE	93	1927	2433	3.92	37.42	188.68	7.15	50	57
65	1646442	120	90	120	26	AFEBRILE	97	1275	1284	0.57	27.63	226	7.38	38	55
66	1465958	130	80	98	18	AFEBRILE	98	257	640	0.17	29.05	225	7.46	34	123
67	1491700	130	70	98	20	AFEBRILE	98	387	453	0.91	26.08	260	7.38	43	81
68	1504929	100	60	80	20	AFEBRILE	96	514	548	0.33	29.25	292	7.41	45	90
69	1492020	120	80	86	20	AFEBRILE	98	118	54	0.19	28.4	114	7.44	37	57
70	1336036	100	60	60	22	AFEBRILE	98	367	418	0.8	24.53	88	7.42	35	62
71	1547395	110	70	93	24	AFEBRILE	99	425	522	0.4	23.95	367	7.6	45	60
72	1122065	110	70	82	18	AFEBRILE	98	66	43	0.24	28.4	260	7.43	37	60
73	1553425	110	70	86	22	AFEBRILE	98	173	244	0.4	19.98	12.06	7.38	51	21
74	1593617	60	40	110	20	AFEBRILE	98	2048	3086	0.35	26.4	168	7.43	39	29
75	1594956	120	70	78	20	AFEBRILE	99	237	370	0.12	24.52	217	7.46	41	74
76	1592277	120	90	62	22	AFEBRILE	100	444	672	0.3	19.35	85	7.5	27	115
77	1599168	110	60	88	22	AFEBRILE	99	4214	6096	0.57	29.8	49	7.44	33	115
78	1597794	120	70	86	18	AFEBRILE	99	63	83	0.07	24.5	91	7.41	38	87
79	1628222	120	80	72	20	AFEBRILE	98	2522	7162	0.65	29.6	98	7.38	38	54
80	1465958	160	80	128	22	AFEBRILE	98	541	864	0.4	24.8	86	7.45	27	104
81	1634135	120	80	64	22	AFEBRILE	96	829	916	1.2	27.6	67	7.47	33	80
82	1639412	110	70	68	20	AFEBRILE	100	384	452	0.6	24.6	339	7.45	34	45
83	1173532	140	90	106	24	AFEBRILE	92	359	289	0.64	27.8	308	7.52	29	203
84	1688480	90	60	86	20	AFEBRILE	98	512	648	0.56	24.4	155	7.42	35	45
85	1704874	110	90	90	20	AFEBRILE	96	288	198	0.01	26.8	202	7.37	36	48
86	1643402	110	60	102	24	AFEBRILE	99	172	407	0.5	27.6	9.87	7.35	37	44
87	1710227	140	90	74	20	AFEBRILE	95	1949	2994	1.4	29.8	9.9	7.32	56	36
88	1718144	100	60	98	20	AFEBRILE	96	579	701	1.64	28.6	0.57	7.38	37	44
89	1691998	100	70	98	20	AFEBRILE	98	689	1360	1.2	24.6	207	7.44	30	124

SR NO.	MRD NO	LACT	HCT	HCO3	CA2	AMYLASE	LIPASE	PROCALCITONIN	MONOCYTE DISTRIBUTION WIDTH	C REACTIVE PROTEIN	HB	TLC	NEUTROPHIL COUNT	PLATELET COUNT
48	1173532	1.4	47	24	1.04	154	84	0.01	25.6	1.61	13.7	11.9	81.1	181
49	1657528	2	34	19.2	1.06	608	436	0.19	27.8	330	12.2	29.2	94.7	160
50	1646216	2.5	36	12.1	0.63	2050	3268	2.1	29.4	412	13.4	10.6	90	217
51	1685453	1.2	47	23.4	0.98	778	856	7.6	27.83	317	14.8	14.3	92	175
52	1685561	2	45	24.9	1.01	674	1004	0.1	26.4	144	10	17.1	84	120
53	1647533	0.6	22	37	0.99	24	12	0.05	25.8	92	5.9	11.8	80	191
54	1640675	4	35	17.5	1.01	288	758	0.75	29.8	129	11.8	22.14	91	229
55	1639879	1.8	42	21.4	1.02	153	51	0.43	22.84	272	11.5	6.6	78	100
56	1679155	2.1	40	27.2	0.9	104	111	0.01	23.42	110	12.1	16.9	76	452
57	1681343	6.1	52	14.2	1.1	856	998	0.8	27.8	154	17.4	24.3	89	437
58	1674082	1.1	45	23	0.8	182	201	0.2	26.4	74	11.9	12.6	90	314
59	1067844	1.2	39	22.3	1.1	174	78	0.06	22.3	154	13.9	12.1	91	185
60	751445	4.3	33	24.2	1.1	234	362	0.8	28.1	92	9.2	24	90.1	178
61	1714079	2.9	48	24	2.1	4664	2875	0.6	58.8	192	10.2	9.18	77.5	633
62	1665232	4.6	37	24.4	1.07	245	819	0.33	28.4	143	9.9	17.15	90.8	236
63	1649417	1.8	41	22.6	1.01	48	36	1.6	29.4	135	10.1	12.7	76.8	202
64	1695292	1.9	33	17.4	1.05	977	1412	2.9	36.2	212	10.5	6.6	79.7	66
65	1646442	1.8	42	22.1	1.2	658	606	0.8	28.2	252	15.1	25	86	150
66	1465958	2.2	40	24	1.03	377	237	0.35	29.23	112	15.8	18.56	84	128
67	1491700	1.6	22	24.4	1.07	130	87	0.81	25.18	94	16.5	17.5	83	110
68	1504929	0.9	41	28.5	1.01%	202	188	0.1	28.54	145	14	14.2	86	248
69	1492020	1.2	38	25	1.07	82	45	0.15	28.1	135	10.8	12.1	70	481
70	1336036	0.9	37	23.4	1.01	168	110	0.05	26.3	111	11.4	5.9	31	365
71	1547395	2.6	41	25.4	1.06	98	64	0.01	22.95	98	11.3	12.25	86	177
72	1122065	1.9	38	24.3	1.01	54	42	0.25	28.2	220	10.6	16.7	74	231
73	1553425	1.1	42	30.2	1.04	110	154	0.06	20.2	161	11.8	10.5	53	150
74	1593617	1.4	44	25.9	1.02	554	687	0.31	27.2	152	17.7	14.31	93	221
75	1594956	0.8	31	29.2	1.14	132	145	0.1	24.2	165	10.3	12.1	78	237
76	1592277	0.7	27	21	1.05	231	287	0.02	20.1	72	9.6	8.8	75	215
77	1599168	1.2	40	22.4	1.07	765	860	0.5	28.95	65	11.2	16.3	96	153
78	1597794	0.9	45	24	1.03	145	2118	0.05	25.1	85	13.3	8.7	75	281
79	1628222	0.6	42	22.5	0.9	555	726	0.3	28.9	76	11.7	4.5	72	56
80	1465958	1.2	33	18.8	0.95	154	201	0.05	24.2	56	10.5	18.7	83	201
81	1634135	0.9	46	24	0.99	226	254	1.2	27.4	52	14.6	15	87	153
82	1639412	1.1	43	23.3	1.03	224	298	0.08	24.2	228	10.6	14.1	81	415
83	1173532	0.7	35	23.7	1	192	126	0.53	26.8	276	13	6.2	73	150
84	1688480	0.6	42	24.2	1.02	198	204	0.2	24.2	108	11.3	16	63	525
85	1704874	0.9	44	23.2	0.9	128	108	0.01	24.4	158	13.4	8.5	49	241
86	1643402	1.1	42	24.2	1.02	128	154	0.07	26.8	8	14	9.5	67	201
87	1710227	2.1	45	29	1.07	388	441	0.9	26.8	262	13.4	12.4	88	222
88	1718144	1.3	40	24.2	1.02	201	165	1.3	29.2	302	13.4	9.4	82	186
89	1691998	1.2	37	20.4	0.53	335	558	0.14	25	97	13.4	12.4	85	167

SR NO.	MRD NO	HEMATOCRIT	RDW	INR	BILIRUBIN (T)	BILIRUBIN (D)	SGOT	SGPT	ALP	TOTAL PROTEIN	ALBUMIN	Na	K	Cl	Cr	Urea
48	1173532	42	14.1	1.03	0.58	0.19	21	16	94	9.1	5.15	138	4.49	96	1.47	59
49	1657528	38.6	14.9	1.36	1	0.4	71	49	158	6.4	3.53	139	4.37	101	0.98	76
50	1646216	42	15.7	1.05	0.86	0.36	180	62	74	5.2	2.79	131	4.2	100	4.1	184
51	1685453	45.5	15.7	1.57	2.32	1.09	112	422	232	6.6	4.3	136	4.25	104	0.72	23
52	1685561	34	19.6	1.38	1.18	0.51	298	283	162	7.2	3.74	133	4.78	98	0.78	30
53	1647533	98	15	1.47	0.5	0.11	64	51	147	5.9	2.23	135	3.3	92	0.7	22
54	1640675	27	14	1.31	2.05	1.19	90	82	250	5.1	2.5	143	3.4	105	1.81	638
55	1639879	361	6	1.4	1.43	0.72	151	57	48	5.6	3.4	138	3.05	101	0.75	42
56	1679155	37	14.4	1.26	0.47	0.09	23	22	90	6.5	3.2	136	3.99	96	0.54	15
57	1681343	54	13.1	1.01	0.75	0.18	65	128	99	7.6	4.29	139	4.46	100	1	33
58	1674082	37.6	17.4	1.08	2.99	2.11	376	382	277	7.1	4.25	139	4.56	103	0.69	17
59	1067844	42.4	14.6	1.32	1.55	0.8	126	200	77	6.8	3.85	136	4.8	101	0.65	28
60	751445	29.2	21.3	1.44	4.78	2.77	909	1077	409	5.3	2.95	129	3.82	91	1.6	51
61	1714079	32.8	14.5	1.18	0.59	0.37	181	178	207	6.8	2.83	123	4.63	90	0.86	42
62	1665232	32.9	18.3	1.34	0.64	0.34	14	20	72	6.8	3.79	137	3.69	100	0.99	24
63	1649417	35	32.2	1.28	1.09	0.49	111	32	489	5.9	2.42	140	3.76	103	1.23	31
64	1695292	30.9	15.9	1.37	1.71	0.92	2925	1731	62	4.9	2.821	141	5.25	105	5.73	141
65	1646442	45.6	20.7	1.48	1.25	0.51	86	56	130	5.5	3.29	137	4.14	101	0.66	43
66	1465958	47	13	1.19	2.13	0.86	36	32	156	6.5	3.84	133	3.81	93	0.74	26
67	1491700	50	13.6	1.18	0.56	0.18	45	20	187	5.7	2.73	144	4.42	109	2.74	120
68	1504929	42.9	15.2	1.17	0.68	0.23	68	42	135	5.5	3.3	138	3.8	110	0.72	92
69	1492020	41	15.6	1.67	1.08	0.8	14	13	87	5.5	2.8	129	3.8	93	0.69	13
70	1336036	35	14.8	1.04	0.57	0.26	56	65	192	7.5	4	139	4.04	100	0.36	10
71	1547395	33	15.7	1.17	2.12	1.46	42	41	152	5.2	2.57	134	3.79	101	0.52	26
72	1122065	39.6	13.9	1.44	0.64	0.3	26	31	112	6.8	3.4	137	3.82	98	0.74	26
73	1553425	36.4	14	1.08	0.31	0.12	21	16	94	9.1	5.15	138	4.19	101	0.83	24
74	1593617	52	14	1.19	1.36	0.51	45	28	108	6.6	3.8	136	4.2	101	0.92	23
75	1594956	31	16	1.16	1.02	0.28	84	64	98	5.8	3.4	139	4.05	100	0.54	7
76	1592277	34	15.8	1.09	0.71	0.11	19	10	117	6.2	3.2	133	4.64	96	0.4	5
77	1599168	40	15	1.13	3.64	1.46	248	373	579	6.9	3.6	13.6	4.73	101	0.61	18
78	1597794	41	14	1.71	0.53	0.3	49	29	128	6.7	3.3	140	4.3	105	0.95	35
79	1628222	36	15	1.21	3	1.6	35	26	56	6.1	3.8	135	4.1	100	1.6	44
80	1465958	78	16	1.5	0.29	0.6	56	54	84	5.8	2.8	135	3	99	0.58	106
81	1634135	45	14.6	1.05	1.25	0.21	297	535	122	6.4	3.9	134	4.1	99	0.82	32
82	1639412	32	15	1.25	0.24	0.17	15	16	124	5.8	3.3	135	4	97	0.52	214
83	1173532	40	15	1.25	4.86	3.35	51	54	55	5.3	2.8	138	3.8	104	1.9	85
84	1688480	35	15	1.2	2.35	1.6	37	30	168	6.3	2.2	129	4.5	95	0.5	28
85	1704874	41.5	18	1.11	0.42	0.06	38	41	98	7.4	4.2	141	3.98	102	0.82	28
86	1643402	42	16	1.03	10.07	6.87	156	386	666	7.8	3.73	136	4.62	102	0.87	33
87	1710227	42	16	1.12	1.7	0.51	27	20	54	5.6	3.04	138	4.2	102	0.7	32
88	1718144	40	13	1.2	0.45	0.22	28	15	337	6.4	4.26	137	4.3	99	0.49	18
89	1691998	41	15	1.03	1.97	0.43	168	5	154	6.5	3.4	137	4.5	104	0.95	11

SR NO.	MRD NO	RADIOLOGICAL FINDINGS_evidence of pancreatitis	severity	GP	peri pancreatic collections	necrosis	duct disruption	cholelithiasis	congenital anomaly	fat stranding	other findings
48	1173532	YES	MODERATE	2	NO	NO	NO	NO	NO	YES	NO
49	1657528	YES	SEVERE	2	YES	YES	NO	YES	NO	YES	NO
50	1646216	NO	SEVERE	2	NO	NO	NO	NO	NO	NO	CLD
51	1685453	YES	MODERATE	2	NO	NO	NO	YES	NO	YES	NO
52	1685561	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
53	1647533	YES	MILD	1	NO	YES	NO	NO	NO	YES	SPLENIC VEIN THROMBOSIS
54	1640675	YES	SEVERE	2	YES	NO	NO	YES	NO	YES	NO
55	1639879	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	NO
56	1679155	YES	MILD	1	YES	YES	NO	YES	NO	NO	CHOLEDOCHOLITHIASIS
57	1681343	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
58	1674082	YES	MILD	1	YES	NO	NO	YES	NO	YES	NO
59	1067844	YES	MILD	1	YES	YES	NO	NO	NO	NO	NO
60	751445	YES	SEVERE	2	YES	NO	NO	NO	NO	YES	NO
61	1714079	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	NO
62	1665232	YES	MILD	1	NO	YES	NO	NO	NO	NO	NO
63	1649417	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
64	1695292	YES	SEVERE	2	YES	YES	NO	YES	NO	NO	PV & SV THROMBOSIS
65	1646442	YES	SEVERE	2	NO	YES	NO	YES	NO	NO	NO
66	1465958	NO	MILD	1	NO	NO	NO	NO	NO	NO	NO
67	1491700	YES	MODERATE	2	YES	NO	NO	NO	NO	NO	NO
68	1504929	NO	MILD	1	NO	NO	NO	NO	NO	NO	NO
69	1492020	YES	SEVERE	2	YES	YES	NO	YES	NO	NO	NO
70	1336036	YES	MILD	1	NO	NO	NO	YES	NO	NO	NO
71	1547395	YES	MILD	1	ES	NO	NO	YES	NO	YES	NO
72	1122065	YES	MODERATE	2	YES	YES	NO	NO	NO	YES	NO
73	1553425	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
74	1593617	YES	SEVERE	2	YES	NO	NO	YES	NO	NO	NO
75	1594956	YES	MODERATE	2	YES	NO	NO	NO	NO	YES	NO
76	1592277	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
77	1599168	YES	SEVERE	2	NO	YES	NO	NO	NO	YES	NO
78	1597794	YES	MODERATE	2	YES	NO	NO	NO	NO	YES	NO
79	1628222	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
80	1465958	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
81	1634135	YES	MILD	1	YES	NO	NO	NO	NO	YES	NO
82	1639412	YES	MILD	1	YES	NO	NO	NO	NO	YES	NO
83	1173532	YES	SEVERE	2	YES	YES	NO	NO	NO	YES	NO
84	1688480	YES	MILD	1	YES	NO	NO	YES	NO	YES	NO
85	1704874	YES	MILD	1	YES	NO	NO	NO	NO	YES	NO
86	1643402	YES	MODERATE	2	NO	NO	NO	YES	NO	NO	CHOLEDOCHOLITHIASIS
87	1710227	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	NO
88	1718144	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
89	1691998	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	NO

SR NO.	MRD NO	SYMPTOMS_ABDOMINAL PAIN	ABDOMINAL DISTENTION	NAUSEA	VOMITING	FEVER	BREATHLESSNESS	DECREASED URINE OUTPUT	YELLOWISH DISCOLORATION OF URINE	CLAY COLORED STOOLS
48	1173532	YES	NO	NO	YES	NO	YES	YES	NO	NO
49	1657528	YES	NO	NO	YES	NO	NO	YES	NO	NO
50	1646216	YES	NO	NO	YES	NO	NO	NO	NO	NO
51	1685453	YES	YES	NO	YES	NO	YES	NO	NO	NO
52	1685561	YES	NO	YES	NO	NO	NO	NO	NO	NO
53	1647533	YES	NO	NO	NO	NO	NO	NO	NO	NO
54	1640675	YES	NO	NO	YES	NO	YES	YES	NO	NO
55	1639879	YES	NO	YES	NO	NO	NO	YES	NO	NO
56	1679155	YES	NO	NO	YES	NO	NO	NO	NO	NO
57	1681343	YES	NO	NO	NO	NO	NO	NO	NO	NO
58	1674082	YES	NO	YES	NO	NO	NO	NO	NO	NO
59	1067844	YES	YES	NO	NO	NO	NO	NO	NO	NO
60	751445	YES	NO	NO	NO	NO	YES	YES	NO	NO
61	1714079	YES	NO	NO	NO	YES	NO	YES	NO	NO
62	1665232	YES	NO	NO	NO	NO	NO	NO	NO	NO
63	1649417	YES	NO	NO	NO	NO	NO	NO	NO	NO
64	1695292	YES	NO	NO	NO	NO	NO	YES	NO	NO
65	1646442	YES	NO	NO	YES	NO	YES	YES	NO	NO
66	1465958	YES	NO	YES	YES	NO	NO	NO	NO	NO
67	1491700	YES	NO	YES	NO	NO	NO	YES	NO	NO
68	1504929	YES	NO	YES	YES	NO	NO	NO	NO	NO
69	1492020	YES	YES	YES	NO	NO	NO	NO	NO	NO
70	1336036	YES	NO	YES	YES	YES	NO	NO	NO	NO
71	1547395	YES	NO	YES	YES	NO	NO	NO	NO	NO
72	1122065	YES	NO	NO	YES	YES	NO	YES	NO	NO
73	1553425	YES	NO	NO	YES	NO	NO	NO	NO	NO
74	1593617	YES	NO	YES	YES	NO	YES	YES	NO	NO
75	1594956	YES	NO	YES	NO	NO	YES	NO	NO	NO
76	1592277	YES	NO	NO	NO	NO	NO	NO	NO	NO
77	1599168	YES	NO	YES	YES	NO	YES	YES	NO	NO
78	1597794	YES	YES	NO	YES	NO	YES	NO	NO	NO
79	1628222	YES	NO	NO	YES	NO	NO	NO	NO	NO
80	1465958	YES	YES	NO	YES	NO	NO	NO	NO	NO
81	1634135	YES	NO	NO	NO	NO	NO	NO	NO	NO
82	1639412	YES	NO	NO	NO	YES	NO	NO	NO	NO
83	1173532	YES	YES	YES	YES	YES	YES	YES	NO	NO
84	1688480	YES	NO	YES	NO	NO	NO	NO	NO	NO
85	1704874	YES	NO	YES	NO	NO	NO	NO	NO	NO
86	1643402	YES	NO	YES	YES	NO	NO	NO	YES	YES
87	1710227	YES	NO	NO	NO	YES	YES	YES	NO	NO
88	1718144	YES	NO	YES	NO	NO	NO	NO	NO	NO
89	1691998	YES	YES	YES	NO	NO	YES	YES	NO	NO

SR NO.	MRD NO	SIGNS_TENDERNESS	GUARDING & RIGIDITY	ASCITES	PLEURAL EFFUSION	PALLOR	ICTERUS	LENGTH OF HOSPITAL STAY IN DAYS	LENGTH OF HOSPITAL STAY IN DAYS GP	NEED FOR ICU CARE
48	1173532	NO	NO	NO	NO	NO	NO	5	1	NO
49	1657528	NO	NO	NO	NO	NO	NO	15	3	YES
50	1646216	YES	NO	NO	NO	NO	NO	5	1	YES
51	1685453	YES	NO	NO	YES	NO	NO	8	2	YES
52	1685561	YES	NO	NO	NO	NO	NO	6	1	NO
53	1647533	YES	NO	NO	NO	YES	NO	5	1	NO
54	1640675	YES	NO	NO	YES	NO	NO	5	1	YES
55	1639879	YES	NO	NO	NO	NO	NO	12	2	YES
56	1679155	YES	NO	NO	NO	NO	NO	10	2	NO
57	1681343	YES	NO	NO	NO	NO	NO	7	1	NO
58	1674082	YES	NO	NO	NO	NO	NO	11	2	NO
59	1067844	YES	NO	NO	NO	NO	NO	6	1	NO
60	751445	YES	NO	NO	YES	NO	NO	16	3	YES
61	1714079	NO	NO	NO	NO	NO	NO	10	2	YES
62	1665232	YES	NO	YES	NO	NO	NO	8	2	NO
63	1649417	YES	NO	NO	NO	NO	NO	5	1	NO
64	1695292	YES	YES	NO	NO	NO	NO	13	2	YES
65	1646442	YES	NO	NO	YES	NO	NO	20	3	YES
66	1465958	YES	NO	NO	NO	NO	NO	5	1	NO
67	1491700	YES	NO	NO	NO	NO	NO	20	3	NO
68	1504929	YES	NO	NO	NO	NO	NO	5	1	NO
69	1492020	YES	NO	NO	NO	NO	NO	11	2	NO
70	1336036	NO	NO	NO	NO	NO	NO	6	1	NO
71	1547395	YES	NO	NO	NO	NO	NO	5	1	NO
72	1122065	NO	NO	NO	NO	NO	NO	8	2	NO
73	1553425	NO	NO	NO	NO	NO	NO	5	1	NO
74	1593617	YES	NO	NO	YES	NO	NO	18	3	YES
75	1594956	YES	NO	NO	YES	NO	NO	7	1	NO
76	1592277	YES	NO	NO	NO	NO	NO	5	1	NO
77	1599168	YES	NO	NO	NO	NO	YES	8	2	YES
78	1597794	YES	NO	NO	YES	NO	NO	16	3	NO
79	1628222	YES	NO	NO	NO	NO	NO	9	2	NO
80	1465958	YES	NO	NO	NO	NO	NO	8	2	NO
81	1634135	YES	NO	NO	NO	NO	NO	5	1	NO
82	1639412	YES	NO	NO	NO	NO	NO	5	1	NO
83	1173532	YES	NO	NO	YES	NO	NO	17	3	YES
84	1688480	YES	NO	NO	NO	NO	NO	5	1	NO
85	1704874	YES	NO	NO	NO	NO	NO	5	1	NO
86	1643402	YES	NO	NO	NO	NO	YES	7	1	NO
87	1710227	YES	NO	NO	NO	NO	NO	14	2	YES
88	1718144	YES	NO	NO	NO	NO	NO	5	1	NO
89	1691998	YES	NO	NO	YES	NO	NO	13	2	YES

SR NO.	MRD NO	VENTILATORY SUPPORT	NEED FOR INOTROPES	NEED FOR SURGICAL INTERVENTION	NECROSECTOMY	PERCUTANEOUS CATHETER	DRANAGE	ENDOSCOPIC DRAINAGE	ORGAN FAILURE OCCURRENCE/MODS
48	1173532	NO	NO	NO	NO	NO	NO	NO	NO
49	1657528	NO	YES	NO	NO	NO	NO	NO	NO
50	1646216	YES	YES	NO	NO	NO	NO	NO	NO
51	1685453	NO	NO	NO	NO	NO	NO	NO	NO
52	1685561	NO	NO	NO	NO	NO	NO	NO	NO
53	1647533	NO	NO	NO	NO	NO	NO	NO	NO
54	1640675	YES	YES	NO	NO	NO	NO	NO	NO
55	1639879	NO	NO	NO	NO	NO	NO	NO	NO
56	1679155	NO	NO	NO	NO	NO	NO	NO	NO
57	1681343	NO	NO	NO	NO	NO	NO	NO	NO
58	1674082	NO	NO	NO	NO	NO	NO	NO	NO
59	1067844	NO	NO	NO	NO	NO	NO	NO	NO
60	751445	YES	YES	NO	NO	NO	NO	NO	YES
61	1714079	NO	NO	NO	NO	NO	YES	YES	NO
62	1665232	NO	NO	NO	NO	NO	NO	NO	NO
63	1649417	NO	NO	NO	NO	NO	NO	NO	NO
64	1695292	YES	YES	YES	NO	YES	YES	NO	YES
65	1646442	YES	YES	YES	NO	YES	YES	NO	YES
66	1465958	NO	NO	NO	NO	NO	NO	NO	NO
67	1491700	NO	NO	NO	NO	NO	NO	NO	NO
68	1504929	NO	NO	NO	NO	NO	NO	NO	NO
69	1492020	NO	NO	NO	NO	NO	NO	NO	NO
70	1336036	NO	NO	NO	NO	NO	NO	NO	NO
71	1547395	NO	NO	NO	NO	NO	NO	NO	NO
72	1122065	NO	NO	NO	NO	NO	NO	NO	NO
73	1553425	NO	NO	NO	NO	NO	NO	NO	NO
74	1593617	NO	YES	NO	NO	NO	NO	NO	NO
75	1594956	NO	NO	NO	NO	NO	NO	NO	NO
76	1592277	NO	NO	NO	NO	NO	NO	NO	NO
77	1599168	NO	YES	NO	NO	NO	YES	NO	NO
78	1597794	NO	NO	NO	NO	NO	NO	NO	NO
79	1628222	NO	NO	NO	NO	NO	NO	NO	NO
80	1465958	NO	NO	NO	NO	NO	NO	NO	NO
81	1634135	NO	NO	NO	NO	NO	NO	NO	NO
82	1639412	NO	NO	NO	NO	NO	NO	NO	NO
83	1173532	YES	NO	YES	NO	YES	NO	NO	NO
84	1688480	NO	NO	NO	NO	NO	NO	NO	NO
85	1704874	NO	NO	NO	NO	NO	NO	NO	NO
86	1643402	NO	NO	NO	NO	NO	NO	YES	NO
87	1710227	NO	YES	NO	NO	NO	YES	NO	YES
88	1718144	NO	NO	NO	NO	NO	NO	NO	NO
89	1691998	NO	NO	NO	NO	NO	NO	NO	NO

SR NO.	MRD NO	COMPLICATIONS OF ACUTE PANCREATITIS	PERIPANCREATIC COLLECTION	ACUTE NECROTIZING PANCREATITIS	AKI	RESPIRATORY FAILURE	PLEURAL EFFUSION	SHOCK	OTHER	DISCHARGED/DAMA/DICHARGE ON REQUEST/EXPIRED
48	1173532	YES	NO	NO	YES	NO	NO	NO	NO	DISCHARGED
49	1657528	YES	NO	NO	YES	NO	NO	YES	NO	DISCHARGED
50	1646216	YES	NO	NO	NO	NO	NO	YES	HYPOVOLEMIC	DAMA
51	1685453	YES	NO	NO	NO	NO	YES	NO	NO	DAMA
52	1685561	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
53	1647533	YES	NO	NO	NO	NO	NO	NO	SPLENIC VEIN THROMBOSIS	DISCHARGED
54	1640675	YES	NO	NO	NO	NO	NO	NO	SPLENIC VEIN THROMBOSIS	DISCHARGE ON REQUEST
55	1639879	YES	NO	YES	NO	NO	NO	NO	NO	DISCHARGE ON REQUEST
56	1679155	YES	NO	YES	NO	NO	NO	NO	NO	DISCHARGED
57	1681343	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
58	1674082	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
59	1067844	YES	NO	YES	NO	NO	NO	NO	NO	DISCHARGED
60	751445	YES	NO	NO	NO	NO	NO	NO	HEPATORENAL INVOLEMENT	DISCHARGED
61	1714079	YES	NO	YES	YES	NO	NO	NO	NO	DISCHARGE ON REQUEST
62	1665232	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
63	1649417	YES	NO	NO	NO	NO	NO	NO	GROSS ASCITES	DISCHARGED
64	1695292	YES	NO	NO	NO	NO	NO	NO	HEPATORENAL INVOLEMENT	EXPIRED
65	1646442	YES	NO	NO	NO	YES	NO	NO	SPLENIC VEIN THROMBOSIS	DISCHARGE ON REQUEST
66	1465958	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
67	1491700	YES	NO	NO	YES	NO	NO	NO	NO	DISCHARGED
68	1504929	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
69	1492020	YES	NO	YES	NO	NO	NO	NO	NO	DISCHARGED
70	1336036	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
71	1547395	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
72	1122065	YES	NO	NO	YES	NO	NO	NO	NO	DISCHARGED
73	1553425	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
74	1593617	YES	NO	NO	NO	NO	YES	NO	NO	DISCHARGED
75	1594956	YES	NO	NO	NO	NO	YES	NO	NO	DISCHARGED
76	1592277	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
77	1599168	YES	NO	NO	YES	NO	NO	NO	NO	DISCHARGED
78	1597794	YES	NO	NO	NO	NO	YES	NO	NO	DISCHARGED
79	1628222	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
80	1465958	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
81	1634135	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
82	1639412	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
83	1173532	YES	NO	NO	YES	NO	YES	NO	NO	DISCHARGE ON REQUEST
84	1688480	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
85	1704874	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
86	1643402	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
87	1710227	YES	YES	NO	NO	YES	NO	NO	NO	DISCHARGED
88	1718144	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
89	1691998	YES	NO	NO	YES	NO	NO	NO	NO	DAMA

SR NO.	MRD NO	NAME	AGE	AGE GROUP	SEX	PRESENTING COMPLAINT_PAIN ABDOMEN	ABDOMEN DISTENTION	FEVER	VOMITING	CONSTIPATION	OBSTIPATION	NAUSEA	JAUNDICE	LESS APPETITE
90	1438339	SS	38	2	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
91	1723483	SK	50	3	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
92	1321148	DS	19	1	MALE	YES	NO	NO	NO	YES	NO	NO	NO	NO
93	1735324	AB	38	2	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
94	1737573	GK	58	4	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
95	1733848	SS	40	2	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
96	1409806	HC	38	2	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
97	1745244	JK	64	5	FEMALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
98	1714752	MK	75	5	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
99	1433914	GS	63	5	MALE	YES	YES	YES	YES	NO	NO	YES	NO	NO
100	1291551	HK	60	4	FEMALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
101	1315567	TPS	31	2	MALE	YES	YES	YES	YES	NO	NO	YES	NO	NO
102	1324539	VK	60	4	FEMALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
103	1311099	GS	28	1	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
104	1325151	LK	55	4	FEMALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
105	1326401	MK	35	2	MALE	YES	NO	NO	YES	NO	NO	YES	NO	NO
106	1314183	RS	50	3	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
107	1324050	SK	58	4	MALE	YES	NO	NO	YES	YES	NO	NO	NO	NO
108	1311541	RS	20	1	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
109	1327509	PS	34	2	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
110	1331171	IK	47	3	FEMALE	YES	NO	NO	YES	YES	NO	NO	NO	NO
111	1410661	SA	35	2	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
112	1453195	AG	56	4	MALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
113	1454037	SK	28	1	FEMALE	YES	NO	NO	NO	NO	NO	YES	NO	NO
114	1445178	KJ	47	3	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
115	1447083	AK	19	1	FEMALE	YES	NO	NO	YES	NO	NO	NO	NO	NO
116	1416294	VT	35	2	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
117	1443906	NK	40	2	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
118	1459596	RK	32	2	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO
119	1480241	S	37	2	FEMALE	YES	NO	YES	YES	NO	NO	YES	NO	NO
120	1499968	SS	34	2	MALE	YES	NO	NO	NO	NO	NO	NO	NO	NO

SR NO.	MRD NO	YELLOWISH DISCOLORATION OF EYES	SOB	COUGH	DURATION IN DAYS	DURATION IN DAYS GP	ETIOLOGY_GALL STONE INDUCED	TRIGLYCERIDES	ALCOHOLIC	TRAUMATIC	HYPERCALCEMIA	ANY OTHER
90	1438339	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
91	1723483	NO	NO	NO	1	1	YES	NO	NO	NO	NO	NO
92	1321148	NO	NO	NO	6	3	NO	NO	NO	YES	NO	NO
93	1735324	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
94	1737573	NO	NO	NO	4	2	YES	NO	NO	NO	NO	NO
95	1733848	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
96	1409806	NO	NO	NO	4	2	NO	NO	YES	NO	NO	NO
97	1745244	NO	NO	NO	3	2	YES	NO	NO	NO	NO	NO
98	1714752	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
99	1433914	NO	YES	NO	4	2	NO	NO	YES	NO	NO	NO
100	1291551	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
101	1315567	NO	YES	NO	5	3	NO	NO	YES	NO	NO	NO
102	1324539	NO	NO	NO	1	1	YES	NO	NO	NO	NO	NO
103	1311099	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
104	1325151	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
105	1326401	NO	NO	NO	3	2	NO	NO	YES	NO	NO	NO
106	1314183	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
107	1324050	NO	NO	NO	3	2	NO	NO	YES	NO	NO	NO
108	1311541	NO	NO	NO	1	1	YES	NO	NO	NO	NO	NO
109	1327509	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
110	1331171	NO	NO	NO	3	2	YES	NO	NO	NO	NO	NO
111	1410661	NO	NO	NO	1	1	NO	NO	YES	NO	NO	NO
112	1453195	NO	NO	NO	2	1	YES	NO	NO	NO	NO	NO
113	1454037	NO	NO	NO	1	1	YES	NO	NO	NO	NO	NO
114	1445178	NO	YES	NO	3	2	YES	NO	NO	NO	NO	NO
115	1447083	NO	NO	NO	2	1	NO	YES	NO	NO	NO	NO
116	1416294	NO	NO	NO	1	1	NO	NO	YES	NO	NO	NO
117	1443906	NO	NO	NO	3	2	NO	NO	YES	NO	NO	NO
118	1459596	NO	NO	NO	2	1	NO	NO	YES	NO	NO	NO
119	1480241	YES	NO	NO	4	2	YES	NO	NO	NO	NO	NO
120	1499968	NO	NO	NO	6	3	YES	NO	NO	NO	NO	NO

SR NO.	MRD NO	SBP	DBP	PULSE	RESPIRATORY RATE	TEMPERATURE	SPO2	AMYLASE	LIPASE	PROCALCITONIN	MONOCYTE DISTRIBUTION WIDTH	C REACTIVE PROTEIN	ABG (PH)	PCO2	PO2
90	1438339	110	70	82	18	AFEBRILE	97	313	1063	0.8	28.53	29.8	7.31	42	75
91	1723483	120	80	92	24	AFEBRILE	98	554	602	1.4	29.4	98	7.4	35	54
92	1321148	100	60	92	22	AFEBRILE	98	1995	1906	1.8	30.4	112	7.37	37	45
93	1735324	100	70	90	20	AFEBRILE	96	391	244	0.3	27.6	4.82	7.45	41	55
94	1737573	110	70	90	22	AFEBRILE	99	247	292	0.3	26.4	21	7.38	36	44
95	1733848	110	70	88	18	AFEBRILE	98	298	444	0.4	22.5	367	7.47	36	186
96	1409806	140	90	110	22	AFEBRILE	100	650	521	0.2	28.16	131	7.47	26	76
97	1745244	120	70	98	22	AFEBRILE	98	1222	4125	0.8	23.69	243	7.38	35	58
98	1714752	110	70	135	20	AFEBRILE	100	208	226	0.57	26.2	381	7.3	25	20
99	1433914	110	80	106	22	AFEBRILE	98	879	367	1.58	29.8	276.93	7.46	34	123
100	1291551	130	70	110	18	AFEBRILE	98	494	521	0.26	27.4	92.18	7.38	43	81
101	1315567	110	70	88	20	AFEBRILE	98	519	1750	1.65	30.2	448.77	7.41	45	90
102	1324539	140	80	108	20	99.6	97	289	366	1.4	29.4	214.49	7.44	37	57
103	1311099	110	70	104	24	AFEBRILE	95	326	412	0.65	28.2	382.14	7.42	35	62
104	1325151	120	70	88	20	AFEBRILE	98	338	412	0.6	24.47	367	7.6	45	60
105	1326401	110	70	134	24	AFEBRILE	98	256	394	0.67	28.8	297	7.43	37	64
106	1314183	130	80	72	18	AFEBRILE	98	217	191	0.03	23.63	136	7.43	41	45
107	1324050	110	90	78	20	AFEBRILE	99	1213	1462	0.6	29.1	102	7.33	27	124
108	1311541	110	70	70	24	AFEBRILE	100	281	438	0.4	26.72	128	7.41	32	52
109	1327509	90	60	80	24	AFEBRILE	97	280	262	0.08	21.3	247	7.35	41	65
110	1331171	110	80	62	16	AFEBRILE	93	290	378	0.04	27.25	78.69	7.31	51	100
111	1410661	110	70	106	20	99	95	845	945	0.42	27.6	62.91	7.3	48	77
112	1453195	160	100	114	24	AFEBRILE	96	699	1700	0.35	28.42	129.26	7.28	52	53
113	1454037	130	80	80	24	AFEBRILE	100	257	394	1.2	29.7	145.5	7.34	42	65
114	1445178	120	80	124	24	AFEBRILE	93	1927	2433	3.92	37.42	188.68	7.15	50	57
115	1447083	140	70	88	18	98.8	97	632	706	0.66	26.4	299	7.41	35	71
116	1416294	130	70	84	14	99.2	98	260	206	0.08	24.6	385	7.45	37	69
117	1443906	90	60	122	22	AFEBRILE	96	233	350	1.2	29.45	198	7.47	39	16
118	1459596	130	80	98	18	AFEBRILE	98	257	640	0.17	29.05	225	7.46	34	123
119	1480241	130	70	98	20	AFEBRILE	98	387	453	0.91	26.08	260	7.38	43	81
120	1499968	120	80	124	24	AFEBRILE	93	1927	2433	3.92	37.42	188.68	7.15	50	57

SR NO.	MRD NO	LACT	HCT	HCO3	CA2	AMYLASE	LIPASE	PROCALCITONIN	MONOCYTE DISTRIBUTION WIDTH	C REACTIVE PROTEIN	HB	TLC	NEUTROPHIL COUNT	PLATELET COUNT
90	1438339	4.4	47	21	1.04	186	495	0.6	29.8	88	15.6	11.3	89	226
91	1723483	0.9	45	23.4	1.01	302	278	1.2	29.6	86	12.3	11.1	92	410
92	1321148	1.6	47	20.6	0.8	454	756	1.4	29.8	128	10	7.9	77	124
93	1735324	0.8	41	24.2	1.2	186	118	0.02	26.8	12	7.5	6.6	65	349
94	1737573	0.9	42	24.6	1.2	82	68	0.02	26.2	8	11.4	6.4	42	156
95	1733848	1.2	34	26	1.08	188	278	0.1	25.1	225	11.3	12.2	85	177
96	1409806	1.5	42	18.9	0.94	324	241	0.1	29.18	115	12.1	25.4	92	62
97	1745244	1.2	42	22.3	0.9	224	668	0.6	26.03	141	12.6	14.3	90	216
98	1714752	1.3	16	12.3	1.3	153	92	0.4	25.6	367	10.1	0.85	76	195
99	1433914	2.2	40	24	1.03	377	237	0.35	29.23	112	12.2	12.9	83	150
100	1291551	1.6	22	24.4	1.07	130	87	0.81	25.18	94	9.9	8.4	74	225
101	1315567	0.9	41	28.5	1.01%	202	188	0.1	28.54	145	12.4	5.6	77	120
102	1324539	1.2	43	25	1.07	116	96	0.15	28.1	135	12.1	13.2	82	150
103	1311099	0.9	38	23.4	1.01	168	110	0.05	26.3	111	12.8	12.3	90	219
104	1325151	2.6	18	25.4	1.06	98	64	0.01	22.95	98	15.7	16.7	91	150
105	1326401	4.3	39	24.6	0.7	142	294	1.2	25.6	202	12	13.3	89	162
106	1314183	1.4	40	27.2	0.9	104	111	0.01	23.42	110	12.1	16.9	76	452
107	1324050	6.1	52	14.2	1.1	856	998	0.8	27.8	154	17.4	24.3	89	437
108	1311541	1.1	45	23	0.8	182	201	0.2	26.4	74	11.9	12.6	90	314
109	1327509	1.2	39	22.3	1.1	174	78	0.06	22.3	154	13.9	12.1	91	185
110	1331171	4.3	33	24.2	1.1	134	106	0.8	28.1	92	9.2	24	90.1	178
111	1410661	2.9	48	24	2.1	445	565	0.6	29.8	192	10.2	9.18	77.5	633
112	1453195	4.6	37	24.4	1.07	245	819	0.33	28.4	143	9.9	17.15	90.8	236
113	1454037	1.8	41	22.6	1.01	48	36	1.1	29.4	135	10.1	12.7	76.8	202
114	1445178	1.9	33	17.4	1.05	977	1412	2.9	36.2	212	10.5	15.4	90	66
115	1447083	1.1	38	22.3	1.01	245	340	0.6	27.8	93	11.8	14.2	87.5	467
116	1416294	0.9	44	25.7	1.14	7/30/1900	98	0.03	23.4	154	13.5	13	75.5	150
117	1443906	1.3	37	28	1.05	117	123	0.37	29.46	88	10.1	11.36	63	471
118	1459596	2.2	39	24	1.03	377	237	0.35	29.23	112	15.8	18.56	84	128
119	1480241	1.6	22	24.4	1.07	130	87	0.81	25.18	94	16.5	17.5	83	110
120	1499968	1.9	33	17.4	1.05	977	1412	2.9	36.2	212	10.5	6.6	79.7	66

SR NO.	MRD NO	HEMATOCRIT	RDW	INR	BILIRUBIN (T)	BILIRUBIN (D)	SGOT	SGPT	ALP	TOTAL PROTEIN	ALBUMIN	Na	K	Cl	Cr	Urea
90	1438339	46	13.5	1.14	1.4	0.29	46	25	47	6.3	3.7	138	4.5	101	0.66	22
91	1723483	38	22	1.06	2.21	1.37	405	390	673	7.6	4.6	140	3.38	106	0.68	14
92	1321148	29.6	13.8	1	0.34	0.12	25	26	118	7.1	4.3	137	4.3	101	1.01	49
93	1735324	22.4	15	1.16	4.479	0.29	73	102	129	5.6	3.3	142	4.53	106	1.02	17
94	1737573	34.5	13.6	1.44	1.07	0.24	42	19	148	6.7	4.28	139	3.75	106	0.8	17
95	1733848	33	15.7	1.17	3.61	1.32	81	45	198	5	2.7	144	4.5	107	0.53	33
96	1409806	36	13	2.35	5.1	2.9	96	42	118	6.6	2.7	133	3.29	98	1.29	80
97	1745244	38	14	1.14	1.32	0.51	53	19	55	4.8	2.6	145	3.05	111	0.69	35
98	1714752	30.6	14.7	1.59	1.6	0.8	76	72	118	4.6	2.8	142	3.41	133	0.95	52
99	1433914	36	15.6	1.41	0.86	0.31	120	34	78	5.5	3.02	140	4.7	106	3.84	127
100	1291551	38	15.4	1.02	5.28	4.2	204	126	899	6.9	3.74	138	3.66	101	0.66	24
101	1315567	40	15.2	1.68	4.69	3.33	118	53	114	4.1	3.31	143	5.23	108	2.83	56
102	1324539	35	14.9	1.41	1.6	0.3	45	38	142	5.8	3.36	137	3.52	98	0.56	23
103	1311099	44	16.1	1.42	1.58	0.48	32	18	100	5.8	3.13	139	3.84	100	0.65	29
104	1325151	48.5	13.6	1.12	1.4	0.8	32	26	128	6.3	3.8	134	4.62	97	1.37	66
105	1326401	37.4	14.6	1.23	2.47	1.12	69	36	95	6.1	3.35	138	2.98	120	0.71	32
106	1314183	37	14.4	1.26	0.47	0.09	23	22	90	6.5	3.2	136	3.99	96	0.54	15
107	1324050	54	13.1	1.01	0.75	0.18	65	128	99	7.6	4.29	139	4.46	100	1	33
108	1311541	37.6	17.4	1.08	2.99	2.11	376	382	277	7.1	4.25	139	4.56	103	0.69	17
109	1327509	42.4	14.6	1.32	1.55	0.8	126	200	77	6.8	3.85	136	4.8	101	0.65	28
110	1331171	29.2	21.3	1.44	4.78	2.77	174	152	409	5.3	2.95	129	3.82	91	1.6	51
111	1410661	32.8	14.5	1.18	0.59	0.37	181	178	207	6.8	2.83	123	4.63	90	0.86	42
112	1453195	32.9	18.3	1.34	0.64	0.34	14	20	72	6.8	3.79	137	3.69	100	0.99	24
113	1454037	35	32.2	1.28	1.09	0.49	111	32	489	5.9	2.42	140	3.76	103	1.23	31
114	1445178	30.9	15.9	1.37	1.71	0.92	2925	1731	288	4.9	2.821	141	5.25	105	5.73	141
115	1447083	35.6	17.6	1.28	1.15	0.31	61	52	136	5.4	2.7	136	3.87	101	0.4	21
116	1416294	41.2	15	1.29	1.03	0.45	26	50	81	6.9	3.63	141	3.61	101	0.79	28
117	1443906	32	15	1.4	1.04	0.74	76	45	321	7.1	3.17	130	4.18	90	0.66	38
118	1459596	47	13	1.19	1.3	0.3	78	66	156	6.5	3.84	133	3.81	93	0.74	26
119	1480241	50	13.6	1.18	3.1	1.4	45	20	187	5.7	2.73	144	4.42	109	2.74	120
120	1499968	30.9	15.9	1.37	1.71	0.92	2925	1731	62	4.9	2.821	141	5.25	105	5.73	141

SR NO.	MRD NO	RADIOLOGICAL FINDINGS_evidence of pancreatitis	severity	GP	peri pancreatic collections	necrosis	duct disruption	cholelithiasis	congenital anomaly	fat stranding	other findings
90	1438339	YES	MILD	1	YES	NO	NO	NO	NO	YES	NO
91	1723483	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
92	1321148	YES	SEVERE	2	YES	YES	YES	NO	NO	NO	NO
93	1735324	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
94	1737573	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
95	1733848	YES	MILD	1	NO	NO	NO	YES	NO	NO	CHOLEDOCHOLITHIASIS
96	1409806	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	CIRRHOSIS WITH PHT
97	1745244	YES	MODERATE	2	YES	YES	NO	NO	NO	NO	NO
98	1714752	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
99	1433914	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	NO
100	1291551	YES	MILD	1	YES	NO	NO	YES	NO	NO	CHOLEDOCHOLITHIASIS
101	1315567	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	NO
102	1324539	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
103	1311099	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
104	1325151	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
105	1326401	YES	SEVERE	2	YES	YES	NO	NO	NO	NO	NO
106	1314183	YES	MILD	1	YES	NO	NO	NO	NO	NO	NO
107	1324050	YES	SEVERE	2	YES	YES	NO	NO	NO	YES	NO
108	1311541	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
109	1327509	YES	MILD	1	YES	NO	NO	NO	NO	YES	NO
110	1331171	YES	SEVERE	2	YES	YES	NO	YES	NO	YES	NO
111	1410661	YES	MILD	1	YES	NO	NO	NO	NO	NO	NO
112	1453195	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
113	1454037	YES	MILD	1	NO	NO	NO	YES	NO	YES	NO
114	1445178	YES	SEVERE	2	YES	YES	NO	YES	NO	NO	PV & SV THROMBOSIS
115	1447083	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
116	1416294	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
117	1443906	YES	MILD	1	YES	NO	NO	NO	NO	YES	NO
118	1459596	YES	MILD	1	NO	NO	NO	NO	NO	YES	NO
119	1480241	YES	MODERATE	2	YES	NO	NO	YES	NO	NO	NO
120	1499968	YES	SEVERE	2	YES	YES	NO	YES	NO	NO	PV & SV THROMBOSIS

SR NO.	MRD NO	SYMPTOMS_ABDOMINAL PAIN	ABDOMINAL DISTENTION	NAUSEA	VOMITING	FEVER	BREATHLESSNESS	DECREASED URINE OUTPUT	YELLOWISH DISCOLORATION OF URINE	CLAY COLORED STOOLS
90	1438339	YES	NO	NO	NO	NO	NO	NO	NO	NO
91	1723483	YES	NO	YES	NO	NO	NO	NO	NO	NO
92	1321148	YES	YES	YES	NO	NO	YES	YES	NO	NO
93	1735324	YES	NO	YES	NO	NO	NO	NO	NO	NO
94	1737573	YES	NO	NO	NO	NO	NO	NO	NO	NO
95	1733848	YES	NO	NO	YES	NO	NO	NO	NO	NO
96	1409806	YES	YES	YES	NO	NO	YES	YES	YES	YES
97	1745244	YES	NO	YES	NO	NO	NO	YES	NO	NO
98	1714752	YES	NO	YES	YES	NO	NO	NO	NO	NO
99	1433914	YES	YES	YES	YES	YES	YES	YES	NO	NO
100	1291551	YES	NO	YES	NO	NO	NO	NO	NO	NO
101	1315567	YES	YES	YES	YES	YES	NO	YES	YES	NO
102	1324539	YES	NO	YES	NO	NO	NO	NO	NO	NO
103	1311099	YES	NO	YES	NO	NO	NO	NO	NO	NO
104	1325151	YES	NO	NO	NO	NO	NO	NO	NO	NO
105	1326401	YES	NO	YES	NO	NO	YES	YES	NO	NO
106	1314183	YES	NO	YES	NO	NO	NO	NO	NO	NO
107	1324050	YES	NO	NO	YES	NO	YES	YES	NO	NO
108	1311541	YES	NO	NO	NO	NO	NO	NO	NO	NO
109	1327509	YES	NO	NO	NO	NO	NO	NO	NO	NO
110	1331171	YES	NO	NO	NO	NO	YES	YES	YES	NO
111	1410661	YES	NO	YES	NO	NO	NO	NO	NO	NO
112	1453195	YES	NO	NO	NO	NO	NO	NO	NO	NO
113	1454037	YES	NO	NO	NO	NO	NO	NO	NO	NO
114	1445178	YES	NO	YES	NO	NO	YES	YES	NO	NO
115	1447083	YES	NO	NO	YES	NO	NO	NO	NO	NO
116	1416294	YES	NO	NO	YES	NO	NO	NO	NO	NO
117	1443906	YES	YES	YES	NO	NO	NO	NO	NO	NO
118	1459596	YES	NO	NO	NO	NO	NO	NO	NO	NO
119	1480241	YES	NO	YES	YES	NO	YES	YES	NO	NO
120	1499968	YES	NO	NO	NO	NO	NO	YES	NO	NO

SR NO.	MRD NO	SIGNS_TENDERNESS	GUARDING & RIGIDITY	ASCITES	PLEURAL EFFUSION	PALLOR	ICTERUS	LENGTH OF HOSPITAL STAY IN DAYS	LENGTH OF HOSPITAL STAY IN DAYS GP	NEED FOR ICU CARE
90	1438339	YES	NO	NO	NO	NO	NO	8	2	NO
91	1723483	YES	NO	NO	NO	NO	NO	6	1	NO
92	1321148	YES	NO	NO	YES	NO	NO	12	2	YES
93	1735324	YES	NO	NO	NO	NO	NO	5	1	NO
94	1737573	YES	NO	NO	NO	NO	NO	5	1	NO
95	1733848	YES	NO	NO	NO	NO	NO	8	2	NO
96	1409806	YES	NO	YES	YES	NO	YES	14	2	YES
97	1745244	YES	NO	NO	NO	NO	NO	20	3	NO
98	1714752	YES	NO	NO	NO	NO	NO	8	2	NO
99	1433914	YES	YES	YES	YES	NO	NO	37	3	YES
100	1291551	YES	YES	NO	NO	YES	YES	8	2	NO
101	1315567	YES	NO	YES	YES	NO	NO	30	3	YES
102	1324539	YES	NO	NO	NO	NO	NO	5	1	NO
103	1311099	YES	NO	NO	NO	NO	NO	6	1	NO
104	1325151	YES	NO	NO	NO	NO	NO	7	1	NO
105	1326401	YES	NO	NO	YES	NO	NO	9	2	YES
106	1314183	YES	NO	NO	NO	NO	NO	6	1	NO
107	1324050	YES	NO	NO	YES	NO	NO	9	2	YES
108	1311541	YES	NO	NO	NO	NO	NO	6	1	NO
109	1327509	YES	NO	NO	NO	NO	NO	6	1	NO
110	1331171	YES	NO	NO	YES	NO	NO	16	3	YES
111	1410661	NO	NO	NO	NO	NO	NO	10	2	NO
112	1453195	YES	NO	NO	NO	NO	NO	8	2	NO
113	1454037	YES	NO	NO	NO	NO	NO	5	1	NO
114	1445178	YES	YES	NO	NO	NO	NO	13	2	YES
115	1447083	YES	NO	NO	NO	NO	NO	7	1	NO
116	1416294	YES	NO	NO	NO	NO	NO	6	1	NO
117	1443906	NO	NO	NO	NO	NO	NO	8	2	NO
118	1459596	YES	NO	NO	NO	NO	NO	5	1	NO
119	1480241	YES	NO	NO	NO	NO	NO	12	2	NO
120	1499968	YES	YES	NO	NO	NO	NO	13	2	YES

SR NO.	MRD NO	VENTILATORY SUPPORT	NEED FOR INOTROPES	NEED FOR SURGICAL INTERVENTION	NECROSECTOMY	PERCUTANEOUS CATHETER	DRANAGE	ENDOSCOPIC DRAINAGE	ORGAN FAILURE OCCURRENCE/MODS
90	1438339	NO	NO	NO	NO	NO	NO	NO	NO
91	1723483	NO	NO	NO	NO	NO	NO	NO	NO
92	1321148	NO	NO	NO	NO	YES	NO	NO	NO
93	1735324	NO	NO	NO	NO	NO	NO	NO	NO
94	1737573	NO	NO	NO	NO	NO	NO	NO	NO
95	1733848	NO	NO	NO	NO	NO	NO	YES	NO
96	1409806	NO	YES	NO	NO	NO	NO	NO	NO
97	1745244	NO	NO	YES	NO	YES	NO	NO	NO
98	1714752	NO	NO	NO	NO	NO	NO	NO	NO
99	1433914	YES	YES	YES	YES	YES	YES	NO	YES
100	1291551	NO	NO	NO	NO	NO	NO	YES	NO
101	1315567	NO	YES	NO	NO	YES	YES	NO	NO
102	1324539	NO	NO	NO	NO	NO	NO	NO	NO
103	1311099	NO	NO	NO	NO	NO	NO	NO	NO
104	1325151	NO	NO	NO	NO	NO	NO	NO	NO
105	1326401	NO	YES	NO	NO	NO	NO	NO	NO
106	1314183	NO	NO	NO	NO	NO	NO	NO	NO
107	1324050	NO	NO	NO	NO	NO	NO	NO	NO
108	1311541	NO	NO	NO	NO	NO	NO	NO	NO
109	1327509	NO	NO	NO	NO	NO	NO	NO	NO
110	1331171	YES	YES	NO	NO	NO	NO	NO	YES
111	1410661	NO	NO	NO	NO	NO	YES	YES	NO
112	1453195	NO	NO	NO	NO	NO	NO	NO	NO
113	1454037	NO	NO	NO	NO	NO	NO	NO	NO
114	1445178	YES	YES	NO	NO	YES	YES	NO	YES
115	1447083	NO	NO	NO	NO	NO	NO	NO	NO
116	1416294	NO	NO	NO	NO	NO	NO	NO	NO
117	1443906	NO	NO	NO	NO	NO	NO	NO	NO
118	1459596	NO	NO	NO	NO	NO	NO	NO	NO
119	1480241	NO	NO	NO	NO	NO	NO	NO	NO
120	1499968	YES	YES	YES	NO	YES	YES	NO	YES

SR NO.	MRD NO	COMPLICATIONS OF ACUTE PANCREATITIS	PERIPANCREATIC COLLECTION	ACUTE NECROTIZING PANCREATITIS	AKI	RESPIRATORY FAILURE	PLEURAL EFFUSION	SHOCK	OTHER	DISCHARGED/DAMA/DICHARGE ON REQUEST/EXPIRED
90	1438339	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
91	1723483	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
92	1321148	YES	NO	NO	YES	NO	YES	NO	NO	DISCHARGED
93	1735324	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
94	1737573	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
95	1733848	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
96	1409806	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGE ON REQUEST
97	1745244	YES	NO	YES	NO	NO	NO	NO	NO	DISCHARGED
98	1714752	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
99	1433914	YES	NO	NO	NO	NO	NO	NO	WON	EXPIRED
100	1291551	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
101	1315567	YES	NO	NO	NO	NO	NO	NO	WON	DAMA
102	1324539	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
103	1311099	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
104	1325151	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
105	1326401	YES	NO	NO	NO	NO	YES	YES	NO	DAMA
106	1314183	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
107	1324050	YES	NO	NO	YES	NO	YES	NO	NO	DISCHARGED
108	1311541	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
109	1327509	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
110	1331171	YES	NO	NO	NO	NO	NO	NO	HEPATORENAL INVOLEMENT	DISCHARGED
111	1410661	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
112	1453195	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
113	1454037	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
114	1445178	YES	NO	NO	NO	NO	NO	NO	HEPATORENAL INVOLEMENT	DAMA
115	1447083	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
116	1416294	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
117	1443906	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
118	1459596	NONE	NO	NO	NO	NO	NO	NO	NO	DISCHARGED
119	1480241	YES	NO	NO	YES	NO	NO	NO	NO	DISCHARGED
120	1499968	YES	NO	NO	NO	NO	NO	NO	HEPATORENAL INVOLEMENT	EXPIRED

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No. BFUHS/2K23p-TH/ 50 **Date** 1/1/24

The Principal
Dayanand Medical College & Hospital
Ludhiana

Subject:: Approval of Plan of Thesis.

This is to inform you that the Faculty of Medical Sciences in its meeting held on 25.09.2023 has approved the plan of thesis of **Rohan Sharma**, a student of your college for **MS General Surgery** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
Role of procalcitonin and monocyte distribution width levels as predictor of severity of acute pancreatitis .

Supervisor	**Co-Supervisor:-**	**Co-Supervisor:-**
Dr. Munish Trehan	Dr. Jyoti Chaudhary	Dr. Bhawna Garg
Assoc. Prof.,	Assoc. Prof.	Professor
Dept. of General Surgery	Dept. of Microbiology	Dept. of Pathology

The student may submit the thesis in triplicate alongwith the plan in triplicate also, to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She may be directed to attach a photocopy of this letter with the forwarding letter while submitting thesis in the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic, if any.

Controller of Examinations

Note :

1. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*

ROLE OF PROCALCITONIN AND MONOCYTE DISTRIBUTION WIDTH LEVELS AS PREDICTOR OF SEVERITY OF ACUTE PANCREATITIS

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED
IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF
MASTER OF SURGERY

IN

GENERAL SURGERY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES
FARIDKOT

AUGUST, 2022

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ABSTRACT OF PLAN OF THESIS

Title	ROLE OF PROCALCITONIN AND MONOCYTE DISTRIBUTION WIDTH LEVELS AS PREDICTOR OF SEVERITY OF ACUTE PANCREATITIS
For the degree of	Master of Surgery
Name of the candidate	Dr. Rohan Sharma
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Institution	Dayanand Medical College and Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Acute Pancreatitis is the most common GI problem of hospital admission with increasing incidence in US and other countries. Approx. 15-20% of patients develop necrotizing pancreatitis. Procalcitonin and MDW can serve as simple and inexpensive biochemical parameters in diagnosing Infective pancreatic necrosis.

Aim of Study: Role of Procalcitonin and MDW in early detection of severity of Acute pancreatitis

Materials & methods: A prospective and observational study of patients with Acute Pancreatitis in Dayanand medical college and hospital.

Clinical Significance: As a simple and effective biochemical parameter in diagnosing severity of Acute Pancreatitis.

Keywords: infective pancreatic necrosis, procalcitonin, MDW.

(Signature) Candidate | (Signature) Co-supervisor | (Signature) Co-supervisor | (Signature) Supervisor | (Signature) Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled **"ROLE OF PROCALCITONIN AND MONOCYTE DISTRIBUTION WIDTH LEVELS AS PREDICTOR OF SEVERITY OF ACUTE PANCREATITIS"** exist in the Department of General Surgery at Dayanand Medical College and Hospital, Ludhiana and will be provided to the candidate. We will see that the data being included in the thesis are genuine and is collected by the candidate himself under our supervision and guidance.

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5	TITLE OF THE TOPIC	ROLE OF PROCALCITONIN AND MDW LEVELS AS PREDICTOR OF SEVERITY OF ACUTE PANCREATITIS

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Acute pancreatitis (AP) is a common, non-bacterial disease that occurs with the development of widespread inflammation because of the automatic digestion of pancreatic and surrounding tissue by normally inactive pancreatic enzymes. History and examination can be indicative of AP, and two of the following three criteria should be met for diagnosis: typical history, elevated serum amylase or lipase (≥3-fold more than the upper limit), imaging (computed tomography, magnetic resonance imaging or ultrasound) consistent with Acute pancreatitis. Some classification systems have started to be used in recent years, and one of the most widely used is the Atlanta classification system. According to the revised Atlanta classification in 2012, severe acute pancreatitis (SAP) is defined as an episode of pancreatitis with persistent organ failure. This situation has been reported to have a mortality rate of 12% in patients with sterile necrosis, 30% in those with infected necrosis and 47% in those with multiple organ failure (MOF). Therefore, early assessment of the severity of AP and adequate treatment are of the utmost importance. Hematological biomarkers, such as blood cell indices, have been explored in recent years for their potential role in predicting subsequent septic episodes in at-risk patients. Preliminary evidence has been collected on the possible relevance of Monocyte Distribution Width (MDW). A feasibility study recently conducted at a single academic center showed that acute changes in monocyte size, referred to as the monocyte distribution width (MDW), best discriminated sepsis (e.g., compared with neutrophil volume changes) from other acute illnesses in the emergency department and further suggested that the combined performance of MDW and white blood count (WBC) for early sepsis detection was superior to either. The development of secondary infection in pancreatic necrosis is associated with increased mortality and morbidity. 2012 revised Atlanta Classification represents a global consensus that infective pancreatic necrosis serves as a key determinant of severity in late phase of Acute pancreatitis. Infective

pancreatic necrosis serves as a key determinant of severity in late phase of acute pancreatitis, therefore determining the best available predictor of this determinant of severity is urgent. An accurate indicator of infective pancreatic necrosis allows early identification of those who require any special kind of intervention. Other scoring systems like RANSON score, CT severity index and APACHE II have been used for predicting the severity of Acute pancreatitis. However, none of them could balance accuracy with simplicity. Major drawbacks of these systems are complexity and cumbersome to calculate. Meanwhile, several scoring systems require a relatively extended period (>48 hours) and this may miss a potential therapeutic window.

Reproducible and routine laboratory parameters including PCT AND MDW have been explored as great potential for evaluating the severity. Several studies have shown that dynamic increase in these simple and inexpensive biochemical parameters would be of significant association with severe disease. Several studies on PCT and CRP have demonstrated its role in the diagnosis of sepsis, prognosis of acute severe pancreatitis and even as a prognostic marker following major surgery. Beyond its value in diagnosis of sepsis, PCT has also proved to be useful in monitoring the course and severity of the systemic inflammatory response.

Acute pancreatitis (AP) is highly variable in terms of its clinical presentation and severity. Many scoring systems have been developed for the early detection of severe AP, but they are not convenient for predicting the severity of AP since they involve many parameters. Therefore, there is a need to identify those biomarkers which are easily assessable and can provide results in relatively quicker period to help in planning the further course of action. This study aims to observe role of two such hematological markers i.e., PCT and MDW in determining severity of Acute pancreatitis.

6.2 REVIEW OF LITERATURE

Role of various biomarkers like PROCALCITONIN, C-REACTIVE PROTEIN, BUN, HCT in Acute inflammatory conditions have been studied through different trials done in different parts around the world from time to time. In view of relatively easy access ability & early availability of results these markers of inflammation have gained widespread acceptance & their role in early diagnosis of different conditions like Sepsis, Acute pancreatitis is being watched more closely than ever. As these markers can help in guiding towards early intervention in serious conditions it is necessary to find any significant correlation between their role and the associated condition. Recently a new biomarker i.e., MDW (monocyte distribution width) is gaining importance as a marker for early prediction of severe sepsis.

Bettina M Rau, Esko Kemppainen, Andrew Gumbs, Hans Beger conducted a prospective international multicenter study from December 1999 to March 2004 in dept of General Surgery, in five European academic surgical center (university of Ulm, Germany, University of Saarland, Helsinki, Finland, university of Verona, Italy, University of Bern, Switzerland).on a total of 104 patients for early assessment of pancreatic infections and overall prognosis in acute pancreatitis by procalcitonin. The study was published in Annals of Surgery in May 2007 edition. A total of 104 patients with predicted severe AP were enrolled within 96 hours of symptom onset. PCT was measured prospectively by a semi-automated immunoassay in each center, CRP was routinely assessed. Both parameters were monitored over a maximum of 21 consecutive days and in weekly intervals thereafter.

The results of the study showed that PCT concentration Were significantly elevated in patients with pancreatic infections and associated MODS who all required surgery and non-survivors early after onset of symptoms. The single or combined prediction of two major complications was already possible on the third and fourth day after onset of symptoms with a sensitivity and specificity of 73% and 93% for PCT >3.8 ng/ml. monitoring of PCT allows early and reliable assessment of clinically relevant pancreatic infections and overall

prognosis in AP. This single test parameter significantly contributes to an improved stratification of patients at risk to develop major complications. PCT is the inactive 116 amino acid pro-peptide of the biologically active hormone calcitonin. In acute pancreatitis, PCT has been shown to predict the development of infected necrosis accurately. PCT was found to be an excellent predictor of severity and organ failure within first 24 hours after hospital admission or onset of symptoms. General inclusion criteria for acute pancreatitis were defined as 1). a time interval between onset of typical abdominal symptoms and study inclusion of 96 hours and less, 2) the presence of SIRS and 3) informed consent according to local rules.

Specific inclusion criteria for Severe Acute pancreatitis in this study were 1) at least 3-fold elevated serum amylase or lipase levels, 2) presence of intrapancreatic/extra pancreatic necrosis documented by contrast enhanced CT or a CRP of > 250 mg/l or alternatively at least one failing organ system(pulmonary failure – arterial po2 ,60mmhg at room air or mechanical ventilation, renal failure – creatinine > 180 micromole/l or hemofiltration/dialysis, shock – systolic blood pressure <80 mm hg over > 15 minutes or pressure support) according to Atlanta Classification system. Infection of pancreatic necrosis was diagnosed by guided FNA and/or by intraoperative findings. In all study centers, initial treatment of acute pancreatitis was conservative, including ICU support and administration of adequate prophylactic antibiotics according to local treatment protocols. Indications for surgery were either documented infection of pancreatic necrosis with systemic signs of sepsis or persistent organ failure/abdominal symptoms despite maximum intensive care support in absence of positive FNA results.

PCT was prospectively analyzed in a real time fashion in each study center by a semi-automated chemiluminescent immunoassay. CRP was determined as a routine parameter on automated analyzers in each center. Both parameters were measured over a maximum of 21 consecutive days and thereafter weekly intervals until hospital discharge or death. APACHE and SOFA scores were calculated in 24-

hour interval after study inclusion during the total observation period. All clinically relevant data such as results of diagnostic imaging procedures, surgical procedures, type and duration of specific ICU and antibiotic treatment, vital parameters, and routine laboratory variables were documented.

Patients who developed infected necrosis revealed an early and sustained PCT increase with higher concentrations than in sterile necrosis or edematous pancreatitis. Pct elevation was most expressed in patients with infected necrosis and associated MODS with higher levels compared to patients with infected necrosis in whom persistent organ failure and MODS were absent or in patients with sterile course.PCT concentrations remained significantly elevated throughout the course of the disease in non-survivors, whereas levels quickly returned to normal ranges in surviving patients. In contrast CRP values did not show differences between patients with infected necrosis and MODS, infected necrosis without organ failure, and sterile necrosis/edematous pancreatitis, surviving and non-surviving patients, within the first week after onset of symptoms. The results of the study showed that PCT was reliable means to predict clinically relevant infected necrosis, which was always associated with MODS and ultimately required operative intervention. In addition, PCT proved to be an excellent variable to assess overall prognosis throughout the course of severe acute pancreatitis. Unlike, other proposed laboratory parameters for severity stratification such as trypsinogen activation peptide, the diagnostic accuracy of PCT was not limited to a specific time interval after onset of symptoms. PCT was able to identify patients at risk to develop the 2 major complications, infected necrosis, and death, before they ultimately occurred with high sensitivity and specificity.[1-3]

A diagnostic accuracy study was conducted in department of pancreatic and biliary surgery, *Harbin medical university, China by Chen, Hong-Ze et al* regarding early prediction of infected pancreatic necrosis secondary to necrotizing pancreatitis. The study was conducted in department of pancreatic and biliary surgery, Harbin

Medical university from January 2012 to August 2016. A total of 215 patients were enrolled in the study. All patients were divided into 2 groups, the IPN AND non-IPN groups. The study showed that the maximum level of Hct, BUN, PCT and CRP within 48 hours of admission is an independent factor for infective pancreatic necrosis. Furthermore, the combined diagnosis with these 4 parameters might accurately predict the occurrence of IPN secondary to Necrotizing pancreatitis within the time frame of 48 hours since admission. Although Infective Pancreatic Necrosis typically occurs in the late phase of Acute Pancreatitis, it accounts for up to 50% to 80% of mortalities. An early and late peak mortality followed in the dynamic disease process of Acute Pancreatitis. The late phase is characterized by persistence of systemic and local signs of inflammation which merely occurs in patients with MASP or SAP. Infection is the major cause of death in the late phase of disease. Secondary infection or peripancreatic tissue, accompanied with gut barrier dysfunction and a series of bacterial translocation are correlated with development of sepsis. In addition, abdominal infection and sepsis will accordingly aggravate the state of IPN and lead to a higher mortality of 80% to 85% in the late phase. In the above study the mortality of patients with Infective pancreatic necrosis was 13.8% which was significantly higher than the mortality of patients with sterile necrosis. Tenner et al reported patients with IPN suffered an essential increase in mortality ranging from 14% to 69% due to sepsis and multiple organ failure, compared with patients with sterile necrosis. The main reason is that IPN and sepsis contribute to the high mortality and morbidity in the late phase of course. Therefore, accurately predicting the occurrence of IPN in the early course plays a critical role in improving patient’s outcome. The results of the study showed that a notable effect of predicting the development of IPN benefits from the combination of the maximum levels of the HCT, BUN, PCT and CRP within 48 hours of admission. The above study was among the very few that had used all the above 4 common parameters to indicate the disease dynamics for predicting the subsequent development of IPN within 48 hours of admission.

Early severity assessment is important, especially in first 48 hours of admission with respect to the window of opportunity for using interventions to prevent necrosis. Although the maximum serum concentration of CRP is achieved after 72 hours, it can discriminate severe cases from mild cases of Acute pancreatitis within the first 24 hours. The highest PCT value from serial daily measurements over a long time better identifies IPN than intermittent measurements.[11-14]

A prospective study was conducted in India by *CP Madhu, D Venkateshwar* Reddy, on 40 patients with acute pancreatitis in the department of general surgery, JSS hospital, Mysore from October 2014 to October 2016 to detect the accuracy of PCT in predicting severe acute pancreatitis. Pct levels were measured by electrochemiluminescence immunoassay. The accuracy of PCT in predicting severe acute pancreatitis was compared with Ranson's score. The study design was Observational-prospective study design.

A study was published in Turkish Journal of Trauma and Emergency Surgery on role of PCT as predictive markers for Severe Acute pancreatitis by *Nurullah BULBULLER et al* which was done at FIRAT University, in the department of General Surgery between Feb 2001-April 2004. Pts were diagnosed as having acute pancreatitis irrespective of etiology. Patients' duration of symptoms was less than 48 hours. Pancreatitis attacks were classified as severe or mild according to Atlanta criteria. Results of the study showed that when PCT levels and Ranson's and APACHE II scores at admission were compared, these values were found to be significantly higher in patients with severe pancreatitis than in those with mild pancreatitis. The procalcitonin levels of patients with mild pancreatitis were determined daily and remained below 0.5 ng/ml from admission to discharge. All patients with severe pancreatitis had PCT values over 0.5 ng/ml at the time of admission to the hospital. In patients with severe pancreatitis the PCT levels correlated with severity and course of disease. Patients who died despite treatment had PCT levels consistently over 0.5 ng/ml. however, others with severe pancreatitis improved after appropriate surgical and medical treatment. PCT levels

which were higher at the beginning, gradually decreased and were within normal limits at discharge.[7-10]

Similarly, to evaluate the role of monocyte distribution width in determining the prognosis of acute pancreatitis a Study was conducted in Ankara research and training center in Turkey by Abdullah Senlinkci et al. between December 2019 and October 2020. The study divided the cases into two groups of mild pancreatitis and non-mild pancreatitis. From the results of the study, it was concluded that the increase in white blood cell count, neutrophil count, MDW and CRP are associated with moderate to severe pancreatitis. WBC has long been used as an infection and inflammation biomarker. The WBC value is used in some scoring systems such as APACHE-II and Ranson criteria to evaluate the prognosis of acute pancreatitis. It was concluded that the WBC value can be used both in the diagnosis of acute pancreatitis and for the differentiation of mild and severe pancreatitis. In the current study, it was concluded that the WBC value is the most sensitive and specific marker that can be used to differentiate mild and moderate-severe pancreatitis. An increase in neutrophil count indicates the development of systemic inflammatory response syndrome (SIRS) and multiple organ failure, and this is an indicator of severe pancreatitis. Neutrophils provoke an inflammatory cascade and SIRS in AP, causing an increase in lymphocyte count during severe sepsis, and this is associated with a poor prognosis. In the current study, it was concluded that neutrophil count can be used to distinguish between mild and moderate-severe pancreatitis. Circulating neutrophils and monocytes constitute the first response to pathogenic organisms. Recent studies have shown that increased immune cell volume may be used in the diagnosis of sepsis, the combined use of MDW and WBC can be used in the diagnosis of sepsis, MDW can be used in the early diagnosis of sepsis in the emergency department .In the current study, the utility of the MDW was evaluated in the differentiation of mild and non-mild pancreatitis. There was a statistically significant difference between mild and non-mild pancreatitis.[4-6]

6.3 AIMS AND OBJECTIVES OF THE STUDY

1. Role of Procalcitonin and MDW (Monocyte distribution width) in detection of Severity of Acute Pancreatitis.
2. Early prediction of cases who may develop complications like Pulmonary edema, ARDS, DIC, ARF etc.
3. Identification of those cases who may require intervention of any special kind (eg- necrosectomy, drainage)

7. MATERIALS AND METHODS

7.1 SOURCE OF DATA

A Prospective study will be done on patients diagnosed with acute pancreatitis in the department of General Surgery and Allied specialties wards Dayanand medical college and hospital, Ludhiana.

7.2 METHOD OF COLLECTION OF DATA

All patients detected with acute pancreatitis will be included in study. Consent will be obtained from each patient and relevant detailed history will be elicited. Findings of general physical and systemic examination will be recorded. Before conducting the study, the procedure will be explained to the patient in his/her vernacular language to allay the anxiety and fear.

Patients diagnosed as Acute pancreatitis will be included irrespective of the etiology. Will be classified as Severe, Moderate or Mild according to **Revised Atlanta criteria-**

- Mild attacks – minimal organ dysfunction and recovery without problems.

- Moderately severe – organ failure that resolves within 48 hours or local and systemic complications without persistent organ failure

- Severe attacks – persistent organ failure (> 48 hours)

- Blood samples to be taken **on admission and on day 5**

Inclusion Criterion

All patients diagnosed with Acute pancreatitis

1. typical abdominal pain
2. serum lipase or amylase > 3 times the upper limit of normal
3. characteristic CT findings
4. patients age >18 years

Exclusion Criterion

1. Patients not satisfying inclusion criteria
2. Age <18 years
3. Patients with pancreatic cancer

4. Previous drainage or surgery for necrosis
5. Patients not willing to take part in the study

DURATION OF STUDY/ NUMBER OF CASES: 120

APPROACH TO THE STUDY:

- Patient admitted will be diagnosed as a case of acute pancreatitis based on inclusion criteria. Those cases of pancreatitis not satisfying the criteria will be excluded.
- Blood levels of procalcitonin and MDW will be taken on admission (and on day 5) along with other routine investigations and their values will be recorded.
- Regular monitoring of patient's vitals and conditions will be done on daily basis. Based on signs and symptoms patients will be classified as having mild, moderate or severe acute pancreatitis based on **revised Atlanta criteria.**
- Any kind of surgical intervention like PCD insertion with drainage, Necrosectomy etc. will be recorded.
- Status of the patient will be compared with procalcitonin, MDW levels to establish any kind of relationships between them.

OUTCOME: To group and early identification of patients as having mild, moderate or severe pancreatitis using procalcitonin and mdw levels as predictor

Sample size Calculation

It is assumed that the prevalence rate for acute pancreatitis is 7.9 per 100000(International journal of advanced medicine. June 2021)

Assumptions:

Confidence level = 95%

Precision(d) = +- 5%

For estimation of sample size, the following formula has been used

n = (Z2 a x p x (1-p)/d2

where

Za= value of standard normal variate corresponding to a level of significance

P = likely value of parameter

Q = 1- P

D = margin of errors which is a measure of precision

With these assumptions the sample size works out to be around 120

STATISTICAL ANALYSIS

Data will be described in terms of range, mean +_ standard deviation(SD), median, frequencies (no. of case) and relative frequencies(percentages) as appropriate. For comparing categorical data, Chi square test will be performed and fischer exact test will be used when expected frequency is less than 5. A probability value (p value) less than 0.05 will be considered statistically significant. All statistical calculations will be done using (Statistical Package for the Social Science) SPSS21 version (SPSS Inc,. Chicago, IL, USA) statistical program for Microsoft windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS ? IF SO, PLEASE DESCRIBE BRIEFLY.

This study requires procalcitonin and CRP levels to be done in patients with pancreatitis. However, the study does not require any intervention to be done on patients, other humans or animals.

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Yes, Attached herewith

8. LIST OF REFERENCES.

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acute pancreatitis. Canadian Journal of Gastroenterology and Hepatology. 2017;2017:5297143.

PROFORMA

SR NO.

NAME- AGE/SEX -

MRD NO. - DATE OF ADMISSION-

PRESENTING COMPLAINT-

ETIOLOGY

GALL STONE INDUCED ◇ TRIGLYCERIDES ◇

ALCOHOLIC ◇ TRAUMATIC ◇

HYPERCALCEMIA ◇ ANY OTHER- ◇

VITALS

BP- PULSE-

RESPIRATORY RATE - TEMPERATURE-

SPO2-

BLOOD INVESTIGATIONS-

	ON ADMISSION	ON DAY 5
AMYLASE		
LIPASE		
PROCALCITONIN		
MONOCYTE DISTRIBUTION WIDTH		
C REACTIVE PROTEIN		
ABG		

Signature of Candidate **Signature of Supervisor**

DATE					
HB					
TLC					
NEUTROPHIL COUNT					
PLATELET COUNT					
HEMATOCRIT					
RDW					
PTI/INR					

LFT PANEL

DATE					
BILIRUBIN(T)					
BILIRUBIN(D)					
SGOT					
SGPT					
ALP					
TOTAL PROTEINS					
ALBUMIN					

RFTs

DATE					
Na					
K					
Cl					
Urea					
Cr					

Signature of Candidate **Signature of Supervisor**

RADIOLOGICAL INVESTIGATIONS (USG/CT/MRI) –

SYMPTOMS		**SIGNS**	
ABDOMINAL PAIN-		TENDERNESS-	
ABDOMINAL DISTENTION-	◇	GUARDING & RIGIDITY-	◇
NAUSEA-	◇	ASCITES -	◇
VOMITING-	◇	PLEURAL EFFUSION-	◇
FEVER-	◇	PALLOR-	◇
BREATHLESSNESS-	◇	ICTERUS-	◇
URINE OUTPUT-	◇		
YELLOWISH DISCOLORATION OF URINE-	◇		
CLAY COLORED STOOLS-	◇		

Signature of Candidate **Signature of Supervisor**

HOSPITAL COURSE

LENGTH OF HOSPITAL STAY	
NEED FOR ICU CARE- VENTILATORY SUPPORT – NEED FOR INOTROPES	
NEED FOR SURGICAL INTERVENTION- - NECROSECTOMY - PERCUTANEOUS CATHETER	
DRAINAGE - ENDOSCOPIC DRAINAGE - ORGAN FAILURE OCCURRENCE/MODS	
COMPLICATIONS OF ACUTE PANCREATITIS	

FINAL OUTCOME

-DISCHARGED

-DAMA

-DISCHARGE ON REQUEST

-EXPIRED

Signature of Candidate **Signature of Supervisor**

INFORMED PATIENT CONSENT

Date: _____

I…….D/o, W/o, S/o……..…… am willing to participate in the study **"ROLE OF PROCALCITONIN AND MONOCYTE DISTRIBUTION WIDTH LEVELS AS PREDICTOR OF SEVERITY OF ACUTE PANCREATITIS"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

……. ……
Signature of the Witness Signature of the patient

Name:

Signature of Candidate **Signature of Supervisor**

मरीज अनुमति फार्म

तिथि _____

मैं _____ पत्नी/पुत्र/पुत्री _____
निवासी _____
इस शोधकार्य "**ROLE OF PROCALCITONIN AND MONOCYTE DISTRIBUTION WIDTH LEVELS AS PREDICTOR OF SEVERITY OF ACUTE PANCREATITIS"** में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है की यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____	_____
गवाह के हस्ताक्षर	रोगी के हस्ताक्षर/अंगूठे का निशान
नाम:	नाम:

_____
अन्वेषक के हस्ताक्षर

_____
विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ _____

“ROLE OF PROCALCITONIN AND MONOCYTE DISTRIBUTION WIDTH LEVELS AS PREDICTOR OF SEVERITY OF ACUTE PANCREATITIS” ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

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ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ